



**NEWGATE**  
RESEARCH

# COMMUNITY ATTITUDES TO THE USE AND MANAGEMENT OF BIOSOLIDS

**2020 COMMUNITY RESEARCH REPORT**

PREPARED FOR AUSTRALIAN AND NEW  
ZEALAND BIOSOLIDS PARTNERSHIP

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*In preparing this report we have presented and interpreted information that we believe to be relevant for completing the agreed task in a professional manner. It is important to understand that we have sought to ensure the accuracy of all the information incorporated into this report.*

*Where we have made assumptions as a part of interpreting the data in this report, we have sought to make those assumptions clear. Similarly, we have sought to make clear where we are expressing our professional opinion rather than reporting findings. Please ensure that you take these assumptions into account when using this report as the basis for any decision-making.*

*The base (number and type of participants asked each question) and the actual survey questions are shown at the bottom of each page. Results may not always total 100% due to rounding.*

*This project was conducted in accordance with AS: ISO20252:2012 guidelines, to which Newgate Research is accredited. Project reference number: NGR 1906009*

*The images of all individuals included in the report are stock images.*



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# EXECUTIVE SUMMARY AND RECOMMENDATIONS



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# EXECUTIVE SUMMARY: AT A GLANCE

This report details the findings from a quantitative survey conducted with a sample of n=1,225 adults across Australia (n=1,029) and NZ (n=226) during May 2020.

The objective of this research was to understand community awareness and perceptions of biosolids (the treated by-products of wastewater treatment, which can be applied to land or used as fuel for power generation), building on the findings from a previous study conducted in 2010. It also looks at how to communicate about biosolids with the general public.

The survey was conducted with the general population, and also more specifically with people who had closer proximity to biosolids e.g. those living near a wastewater treatment plant (WWTP) or near farmland (biosolids neighbours).

Findings were generally similar between Australia and NZ, and between the general community and biosolids neighbours. Where significant differences exist, they have been noted within this report.

## THE FIVE KEY TAKEAWAYS

1. There is fairly good awareness of the term 'biosolids', and this has increased since 2010.
2. Despite this, people do not consider themselves well-informed about biosolids and are uncertain as to how they feel about them – though very few are immediately against the idea.
3. Land application for farming is reasonably well-accepted (by two-thirds of people) though other applications such as forestry, land rehabilitation and energy have higher acceptance.
4. When given further information about biosolids, positivity tends to increase significantly due to the fact that they are natural, good for the soil and reduce waste; however the unknown long-term health and environmental impacts are still a concern, and people want more information.
5. **This indicates that the ANZBP and its partner organisations should take the opportunity to proactively provide people with simple information about biosolids to build familiarity and understanding.**

Key statistics and more detailed recommendations are provided on the next pages.



# EXECUTIVE SUMMARY: KEY STATISTICS

## AWARENESS OF BIOSOLIDS IN THE GENERAL COMMUNITY

- ◆ **Biosolids are not top of mind as an example of waste re-use or recycling:** **1%** mention 'use of sewage/wastewater for fertiliser' when we ask what comes to mind in relation to the re-use of waste products.
- ◆ **There is reasonable awareness that biosolid products are produced by WWTPs:** **31%** are aware of this after prompting with 'Wastewater Treatment Plants treat the wastewater to produce useful by-products'.
- ◆ **There is fairly good awareness of the term 'biosolids':** **45%** have heard this term before when prompted with it, up from 33% in 2010. Males, those in Aboriginal and Torres Strait Islander communities and older (65+) participants have the highest awareness levels.
- ◆ **There is reasonable knowledge of biosolids:** **37%** of participants are able to describe some aspect of what they are when prompted with the name.
- ◆ **However, few feel they know a lot about them:** **20%** have at least a little knowledge, and just 3% say they know a lot.
- ◆ **Some claim to be using biosolids:** **4%** of participants say they are using biosolids in their gardening/farming activities.

## SENTIMENT AND THE IMPACT OF MESSAGING

- ◆ **People are unsure how they feel about biosolids:** Based on being prompted only with the name, almost 60% feel neither positive nor negative towards biosolids being used in their country or in their local area.
- ◆ **However, people are not against the idea:** Fewer than 8% are negative about biosolids being used in their country or their local area and one-third are positive to some extent.
  - Opinion is more polarized in NZ, where Neighbours are more positive than the General Community
- ◆ **Biosolids align with issues they are concerned about, such as reducing pollution, waste and landfill through reuse.**
  - Being conscious of what goes into the sewers is a latent issue (i.e. interest can be stimulated for almost half).
- ◆ **Proactive communication with biosolids is good:** Positive sentiment doubles when a brief description is shown.

## KEY TAKE-OUTS FROM SEEING THE BRIEF DESCRIPTION

Those positive about biosolids give these reasons:

- ◆ **Biosolids are natural products and therefore better than chemical fertilisers;**
- ◆ **Biosolids are a win-win and a useful reuse of waste and a good way to reduce waste; and**
- ◆ **Biosolids are good for the soil.**

Those who are negative/unsure give these reasons:

- ◆ **They don't have enough information to make a decision; and**
- ◆ **They don't know what the long-term impacts are (on health and the environment).**

# EXECUTIVE SUMMARY: KEY STATISTICS (CONT'D)

## ACCEPTABILITY OF DIFFERENT BIOSOLIDS USES

*In order to understand how best to communicate with the general public about biosolids, we showed participants a list of biosolids uses and asked them to rate how acceptable they felt each of them to be (based on the brief description shown and whatever else they knew already about biosolids).*

- ◆ **Most acceptable uses:** Use on **non-agricultural land, and for fuel and energy** are considered completely acceptable by almost half (and over 70% found each of these uses acceptable to some degree);
- ◆ **Next most acceptable were:** Use on **gardens, in commercial fertiliser, in commercial landscaping, as road fill and on-farm land application** are considered completely acceptable by around 40% (with two-thirds finding each use acceptable to some degree); and
- ◆ Use in soil used to grow **tree-nuts, cooking oils and beer, as well as use in building materials** were next. Around 30% find each of these uses completely acceptable (with between 50 and 60% of people finding each use acceptable to some degree).
- ◆ However, fewer than one-in-ten find any of the potential uses tested unacceptable.

## ACCEPTABILITY OF DIFFERENT BIOSOLIDS FORMATS FOR USE IN FOOD CROPS

- ◆ **Between 30% and 40% of participants** find all of the formats tested to be completely acceptable to grow food with.
- ◆ Acceptability is highest for biosolids as an **ingredient in compost** (either with green waste or vermicomposted).
- ◆ **Fewer than 8% of participants find any of these formats unacceptable.**

## MESSAGE TESTING

*Part of the survey involved showing people batteries of positive and negative messages about biosolids (the order in which the batteries were presented was randomised to remove order bias). Data modelling was used to identify the messages that had the greatest impact on people's perceptions about biosolids – these should be considered as priorities to promote or address in communications about biosolids.*

- ◆ **Seeing the positive battery of messages about biosolids causes net positive sentiment towards local use of biosolids to increase three-fold (from 20% to 71%).**
- ◆ When the negative battery of statements was seen first, sentiment still shifts to the positive, but the scale of change is smaller (two, rather than three-fold). **It appears that after a brief description has been seen, provision of any further information simply serves to strengthen positive sentiment.** Certainly, even when only negative messages are seen, negative sentiment only rises to 12%.
- ◆ Unsurprisingly, considering the feedback received when the brief description was seen, the messages most likely to shift opinion are:
  - Reusing safe, approved biosolids is a great way to **reduce waste that otherwise ends up in landfill**;
  - Biosolids work to **enrich the soil improving its capacity to retain water** and helping reduce the impact of drought;
- ◆ The biggest concerns participants have relate to **what may end up in the sewers, potential pathogenic issues and lack of knowledge about long-term impacts on our health and the environment.** Almost half consider the sewer issue to be extremely important when they are prompted on it. The fact that these concerns relate to unknowns/uncertainties around biosolids rather than defined facts suggests that building evidence through research may help (something also suggested by biosolids stakeholders).

# EXECUTIVE SUMMARY: KEY STATISTICS & RECOMMENDATIONS

## SHIFTS IN SENTIMENT DURING THE SURVEY

- ◆ At the end of the survey, after seeing all the information and messages about biosolids, almost half (**45%**) of **participants ended up feeling more positively towards biosolids** than they did at the beginning of the survey.
- ◆ **A further one-fifth of participants start out positive and stay positive.**
- ◆ A further one-fifth of participants are most likely to **remain undecided about biosolids.**
- ◆ Meanwhile, **around 1 in 10 (11%) felt more negatively about biosolids** than they did at the beginning of the survey.

## TRUSTED SOURCES FOR INFORMATION ABOUT BIOSOLIDS

- ◆ **Government Health Departments, Environment Departments, CSIRO / Crown Research Institutes and University researchers** appear the most trusted channels for information about biosolids. However, local media and social media also play a role for some cohorts.

## WHAT DOES THIS MEAN FOR THE BIOSOLIDS INDUSTRY?

1. **People are open to learning more about biosolids:** People know the term, but they know little beyond this. Provision of basic information about biosolids significantly increases positive sentiment towards local use of biosolids and keeps sentiment up even in the face of negative messaging. You have nothing to lose.
2. **Lead with a concise description of biosolid benefits making sure that the following points underpin communications:**
  - Reuse to reduce landfill;
  - Soil improvement and drought proofing.
3. **Have clear messaging around exacting quality and safety standards, regulation, the economic argument and the phosphate story available to address any queries.**
  - Reassurance on strict guidelines and controls and regulations, combined with messaging on the economic case (low cost fertiliser and low water bills), as well as phosphate reclamation may be required if negative messages gain traction.
  - Building an evidence base through research will also help to address the fear of the unknowns around biosolids.
4. **Consider employing a public awareness campaign to raise consciousness about what goes into the sewers.**
  - However, this could end up raising questions about the safety of biosolids and so would need careful framing and introduction.



# EXECUTIVE SUMMARY: DIFFERENCES IN THE OPINIONS OF KEY GROUPS

Australia and New Zealand	General community and Biosolids Neighbours	Indigenous and non-indigenous communities	Other groups
<p>Few differences emerge between Australia and New Zealand.</p> <p>New Zealand participants are more positive about biosolids use in their country (42% vs. 28%; this was asked before they had received more information) and more accepting of biosolids in a variety of formats (pellets, cake and charcoal fertiliser) than Australians.</p> <p>Australians are more likely to say that minimising energy use is a key environmental concern for them (75% vs. 63% in New Zealand).</p> <p>Within Australia, it appears that those in Queensland are more positive than other participants about biosolids – over-indexing* on acceptance of a variety of biosolids uses including road base, building materials and commercial landscaping compared to other participants.</p>	<p>Few differences emerge between these groups, though there were some indications that Neighbours are more positive and accepting on certain metrics.</p> <p>The general community is more in agreement that it is not right to use human waste in this way (35% vs. 27% of Neighbours) and that pests will be attracted to areas where biosolids are applied (45% vs. 26% of Neighbours) as reasons not to allow use in their local area.</p> <p>Meanwhile, when asked whether biosolids should be used in either their country or their local area (before being given any more information about biosolids than the name), Neighbours in NZ are more positive than the general community in NZ.</p>	<p>Few differences emerge.</p> <p>Indigenous Australians are more likely to be aware of biosolids (72% vs 45% of other Australians) and also to feel positive about biosolids use in their local area (75% positive vs. 35% of other participants).</p>	<p>Males appear more positive about biosolids than females (43% are positive about biosolids being used in their local area, compared to 29% of females).</p> <p>Those aged 65+ are more likely to be aware of biosolids (52% vs. 43% of younger age groups) and to be more positive about biosolids than younger cohorts. They over-index on acceptance of a variety of biosolid uses, including forest enrichment, land rehabilitation, commercial composting and commercial landscaping compared to younger age groups.</p> <p>Females are more likely to say it is extremely important to be conscious of what goes into the toilet/drains than males (50% vs. 42%).</p>

\* i.e. giving high ratings compared to other groups

# BACKGROUND AND SAMPLE



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# BACKGROUND

Biosolids are the major byproduct of the wastewater treatment process and are being increasingly used for a range of purposes including crop and pasture improvement, landscaping, land rehabilitation, road base, oil and fuel.

Production and use of biosolids is highly regulated in Australia, and guidelines around their treatment and use exist in NZ.

The Australian & New Zealand Biosolids Partnership (ANZBP), a member-based collaboration of utilities, consultants, academics and government bodies, is committed to the sustainable management of biosolids.

In 2010, the ANZBP commissioned a program of research to explore and establish stakeholder and community knowledge and attitudes towards biosolids and to develop a suite of benchmark metrics around community awareness and sentiment.

In 2020 a second research project was conducted to update this understanding.

The overarching objective of this study is to obtain feedback from stakeholders and the wider community on the use and disposal of biosolids to help support ANZBP objectives and to inform communications development to address knowledge gaps and issues. Specifically to:

- ◆ Update key findings from the 2010 study, including community awareness and comprehension of biosolids.
- ◆ Identify the factors that most influence community views.
- ◆ Identify key issues to address with key audiences and establish the information sources they would trust the most for information on biosolids.

This report details the findings from the Community research phase. The findings from the Stakeholder research phase are contained in a separate report.



# METHODOLOGY

- ◆ A quantitative survey with a representative cross-section of the general public in Australia and New Zealand. The survey was completed by a total sample of n=1,225 people, comprising n=1,029 in Australia and n=226 in NZ.
- ◆ The research was conducted between 15<sup>th</sup> May and 1<sup>st</sup> June 2020. A mix of online and computer-assisted telephone interviewing (CATI) was used, with CATI employed to help to reach those who live in specific postcode locations (i.e. near sites where biosolids are either being produced or potentially used). The online survey length was 15 minutes and the CATI survey length was 20 minutes (with a small number of questions omitted for the CATI).
- ◆ Quotas were set on location, age and gender to represent a broad cross-section of opinion in line with key population statistics in each country. Data was weighted back to latest population statistics (the Australian Bureau of Statistics 2016 Census and the 2018 New Zealand Census) to correct for any over or under-sampling.
- ◆ Additional quotas were set to achieve a mix of people living close to areas where biosolids are being produced and potentially used (**Neighbours**), and those who do not (**General Community**).
  - Neighbours either lived within a specific postcode area identified by ANZBP or Newgate Research as being within 10km of a wastewater treatment plant, and/or stated in the survey that they lived close to farmland.
- ◆ This approach broadly aligns with 2010 study, apart from:
  - A change in terminology - 'Biosolids Neighbours' were named 'Affected Communities' in the 2010 report.
  - A higher proportion of interviews was conducted online in 2020. This is due to significant shifts in technology and online panel participation since 2010.
  - More sample controls were applied to 2020 data, such as weighting, to optimise locational representativeness.
- ◆ The sample size of n=1,225 means that the overall results contained within this survey have a margin of error of +/-2.8% at the 95% confidence level. A margin of error tells you by how many percentage points your results may differ from the real population value. For example, a 95% confidence interval with a 2 percent margin of error means that your statistic will be within 2 percentage points of the real population value 95% of the time.
- ◆ It is worthwhile to note that this research was conducted during the coronavirus pandemic. The decision was made to proceed with the research in order to provide the required ten-year market snapshot of public sentiment and with the recognition that public attitudes may have permanently changed from the pre-pandemic baseline. It is possible that the pandemic may have served to heighten concerns around the use of biosolids in food production.

Please note the full questionnaire can be found in the Appendix

# SAMPLE

- ♦ The sample has been designed to optimise sample representativeness and achieve broad comparability between waves

		2010	2020	Latest population statistics
AUSTRALIA	TOTAL	<i>n=1,020</i>	<i>n=1,029</i>	
	NSW/ACT	25%	<b>34%</b>	34%
	Vic	21%	<b>25%</b>	26%
	Qld	22%	<b>20%</b>	20%
	WA	14%	<b>10%</b>	11%
	SA	14%	<b>8%</b>	7%
	NT/Tas	4%	<b>3%</b>	3%
	Metro	50%	<b>72%</b>	72%
	Regional	50%	<b>28%</b>	28%
	Indigenous**	2%	<b>3%</b>	3%
	Neighbours	50%	<b>53%</b>	-
	Male	49%	<b>49%</b>	49%
	Female	51%	<b>51%</b>	51%
	18-39	40%	<b>39%</b>	39%
	40-59	35%	<b>35%</b>	35%
	60+	25%	<b>26%</b>	26%
NEW ZEALAND	TOTAL	<i>n=201</i>	<i>n=226</i>	
	North Island	-	<b>77%</b>	76%
	South Island	-	<b>24%</b>	24%
	Iwi/Maori	13%	<b>12%</b>	16%
	Neighbours	50%	<b>70%**</b>	-
	Male	48%	<b>48%</b>	48%
	Female	52%	<b>52%</b>	52%
	18-39	44%	<b>38%</b>	38%
	40-59	34%	<b>35%</b>	35%
	60+	22%	<b>28%</b>	28%
TOTAL		<b>n=1221</b>	<b>n=1,225</b>	

\*\* Please note where 'Indigenous' has been used within the report, it refers specifically to Aboriginal and Torres Strait Islander people in Australia.

\*\*\*If we only include those who live close to wastewater treatment works (as last time) in NZ this proportion would be 53%. However, we feel it is of value to also include those who say they live close to farmland.



# AWARENESS, KNOWLEDGE AND PERCEPTIONS OF BIOSOLIDS



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# TOP-OF-MIND WASTE PRODUCT REUSE/RECYCLING

Reuse of metal, tyres and oil and plastic recycling most commonly mentioned, with only 1-2% mentioning use of sewage or wastewater for fertiliser.

## % Coded mentions

## Mentions (%)

		Total sample	Australia	NZ
Reuse of metal / tyres /oil	27	27	26	35
Plastic / Plastic recycling	19	19	18	19
Recycling (general comment)	18	18	16	26
Paper /cardboard recycling	13	13	13	11
Composting	12	12	11	15
Glass / bottle recycling	11	11	11	12
Using recycling bins	11	11	11	7
Reduce plastic or waste in the first place/ substitute materials	6	6	6	9
Recycling cans	5	5	6	3
Recycling PET /plastic bottles	4	4	4	3
Recycling greywater for use around the home/garden	3	3	3	1
Use of sewage/wastewater for fertiliser	1	1	1	2
Other	4	4	4	5
Don't know/ Not sure/ No idea/ Nothing/Can't recall	11	11	12	4

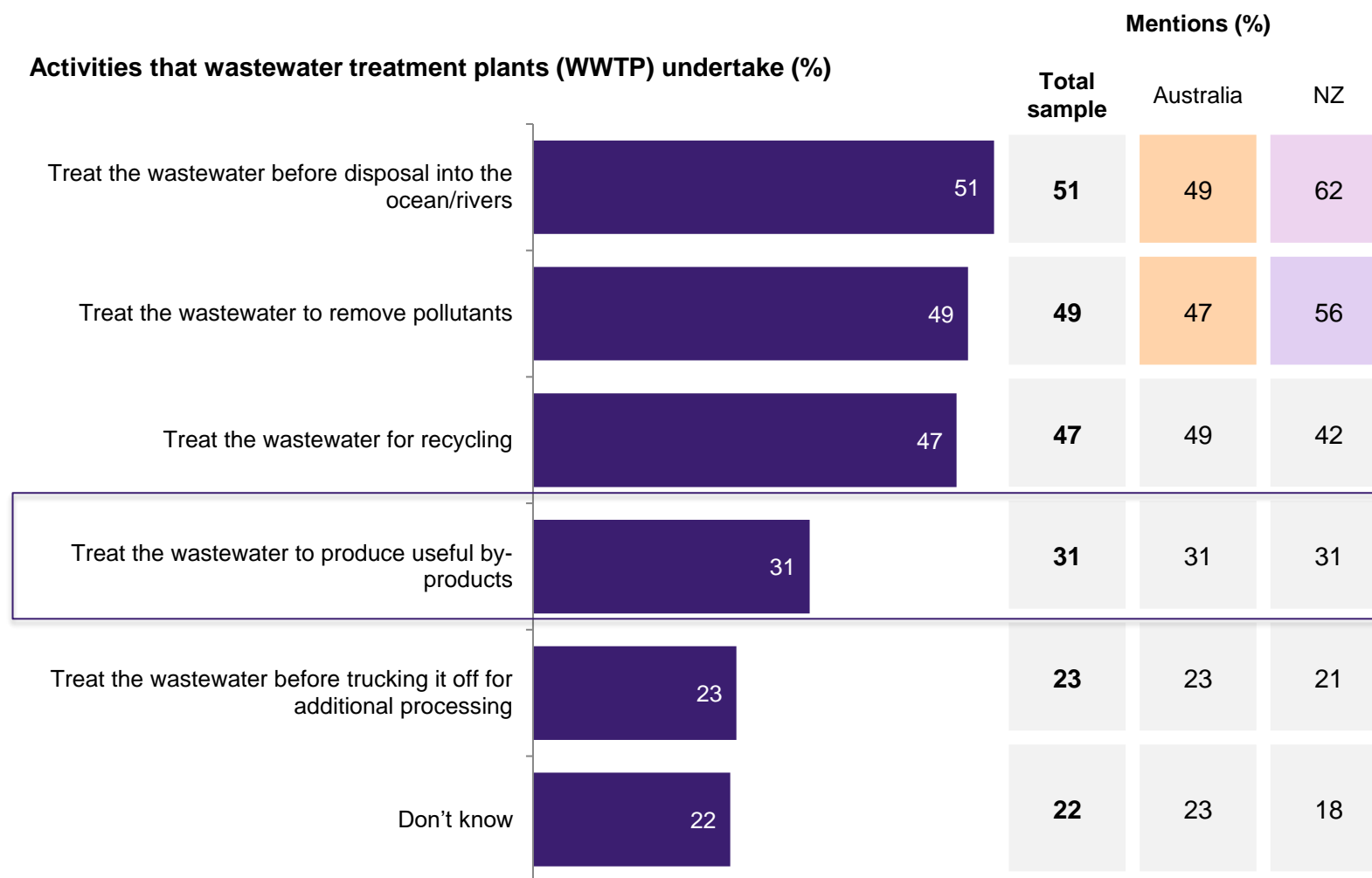
No significant differences between Neighbours and the general community were seen.

Those in regional areas are more likely to mention recycling in general (21% vs. 16% in metro areas).

Significantly higher/lower than other sub-group (@ 95% level of confidence)

# AWARENESS OF BY-PRODUCTS PRODUCED BY WWTPS

One-third are aware of the production of useful by-products from wastewater, which is an increase on the 19% aware in 2010. The story is getting out, but most are still not aware.



The proportion aware of WWTPs producing useful by-products has increased significantly from 19% in 2010 to 31% now.

Those most aware of biosolid production (useful by-products) are:

- Living in metro areas (33% vs. 25% not)
- Male (35% vs. 27% female)

No significant differences between Neighbours and the general community were seen beyond Neighbours being more aware of WWTPs treating water prior to disposal into oceans and rivers (54% vs. 48%).

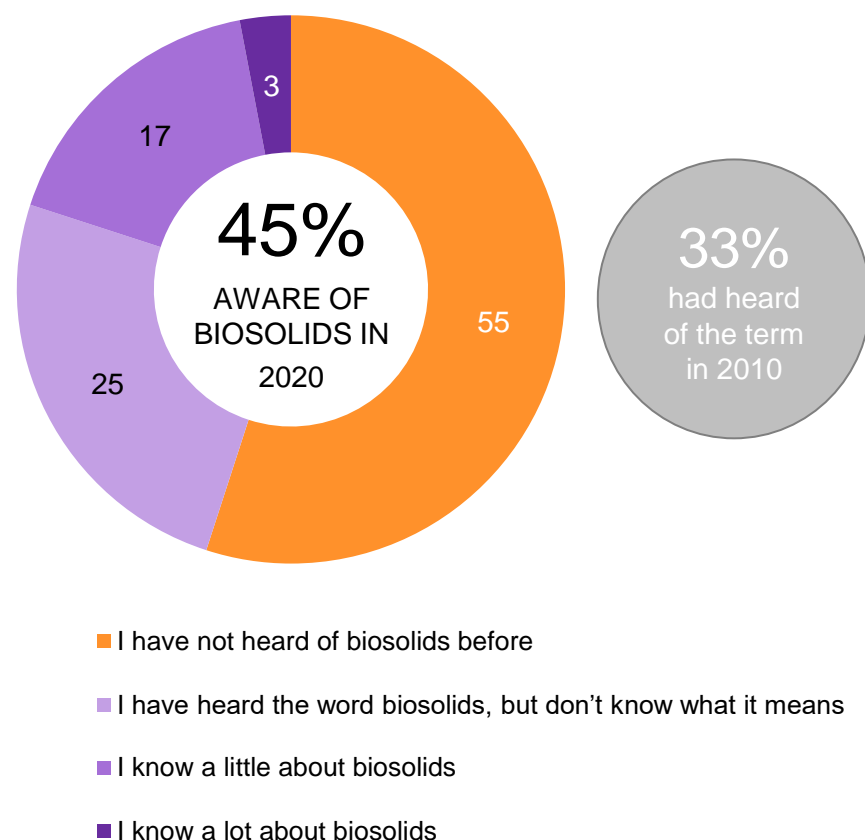
31% of participants say they are aware of a wastewater plant in their local area, and a further 18% are not sure. In 2010, 50% of participants said they were aware.

Significantly higher/lower than other sub-group (@ 95% level of confidence)

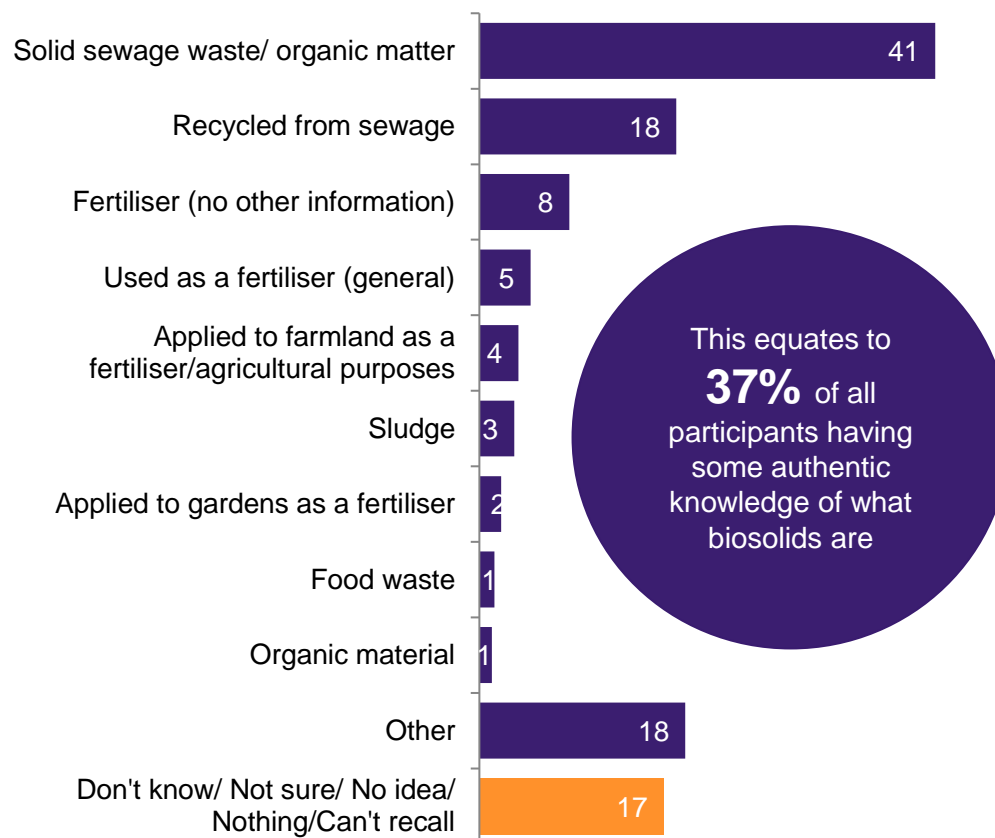
# AWARENESS OF BIOSOLIDS WHEN PROMPTED BY THE NAME

The proportion of people aware of biosolids when prompted with the name is up significantly from 33% in 2010 to 45% in 2020, and roughly one-third have some authentic knowledge of what biosolids are.

Awareness and knowledge of biosolids when prompted by the name (%)



What those aware of biosolids say they know about them- % coded mentions



**6% of gardeners/ farmers in the sample claim to be using biosolids on their land. This equates to 4% of the total sample.**

# AWARENESS OF BIOSOLIDS - PROFILING

Males, Indigenous community members and those with Australian-born parents are more likely to be aware.

	Total sample	Gender		Age					Children under 13yrs		Maori/Iwi		Indigenous		Born overseas		Parents born overseas	
		Male	Female	18-34	35-44	45-54	55-64	65+	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Sample: n=	1,225	583	671	294	236	253	190	282	305	950	26	200	33	1,222	343	912	563	692
Never heard of biosolids	55	46	63	57	53	60	54	48	55	55	58	54	28	56	57	54	59	52
Heard the name only	25	28	21	21	28	21	27	28	23	25	20	22	42	24	23	25	24	25
Some knowledge	21	26	16	22	19	19	19	24	22	20	22	24	30	20	20	21	18	23
NET AWARE	45	54	37	43	47	40	46	52	45	45	42	46	72	44	43	46	41	48

There was no significant difference by location (between country, between Australian states/territories, between metro and regional areas, or between general community and biosolids neighbours).



# HOW PEOPLE FEEL ABOUT BIOSOLIDS USE

Before seeing any further information beyond the name ‘biosolids’, over half of participants are unsure about whether biosolids should be used in either their country or their local area. Neighbours are more positive than the general community in NZ.





# HOW PEOPLE FEEL ABOUT BIOSOLIDS USE - PROFILING

Males, those aged between 18-34 years, parents with children under 13 years, and those who identify as Indigenous Australians are more likely to feel positive to biosolids use in their local area.

	Total sample	Gender		Age					Children under 13yrs		Maori/Iwi		Indigenous		Born overseas		Parents born overseas	
		Male	Female	18-34	35-44	45-54	55-64	65+	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Sample: n=	1,255	583	671	294	236	253	190	282	305	950	26	200	33	1,222	343	912	563	692
POSITIVE	36	43	29	43	38	32	31	29	46	32	50	36	75	35	40	34	35	36
Very positive	14	18	11	15	15	12	15	13	17	13	22	14	40	13	17	13	15	14
Fairly positive	22	25	18	28	22	20	17	16	29	19	28	22	35	21	23	21	20	22
Neutral	59	52	65	53	59	63	63	59	51	61	43	56	23	60	55	60	60	57
Fairly negative	3	3	3	3	2	3	2	6	2	3	0	5	0	3	3	3	3	3
Very negative	3	1	4	1	1	2	4	6	1	3	7	3	2	3	2	3	2	3
NEGATIVE	6	5	7	4	3	5	6	12	3	6	7	8	2	6	4	6	5	7

There was no significant difference by location (between country, between Australian states/territories, between metro and regional areas, or between general community and biosolids neighbours).

  Significantly higher/lower than other sub-group (@ 95% level of confidence)

# PARTICIPANTS WERE THEN SHOWN A DESCRIPTION OF BIOSOLIDS AND ASKED HOW THEY FELT NOW

## **DESCRIPTION SHOWN IN 2010**

*Biosolids are a by-product of sewage treatment. They contain nutrients and can be applied to agricultural land to grow cereals, grains and other crops. They can also be blended with composts for use on domestic gardens, used for landscaping or as fuel for power generation.*

*Biosolids may be quite liquid, or may be dried to produce a soil-like material. Following appropriate treatment, they are very safe; the risk of disease or environmental contamination is extremely low.*

## **DESCRIPTION SHOWN IN 2020**

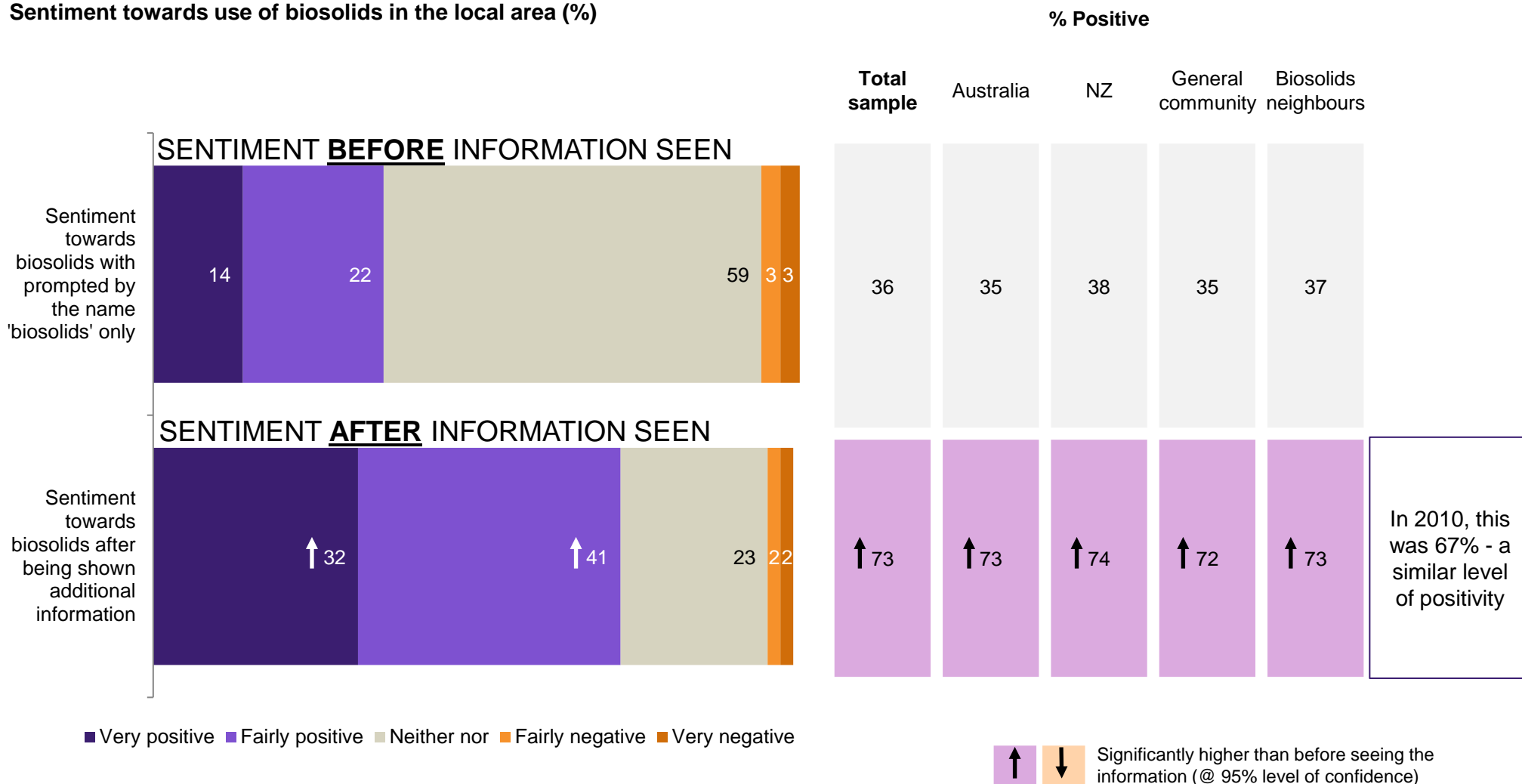
*Biosolids are a solid by-product of wastewater treatment. They are good for soil fertilising and conditioning due to the nutrients and organic materials they contain. They can be applied to the land or used as fuel for power generation.*

*Biosolids can come in different forms. They may be quite liquid, or may be dried to produce a soil-like material known as 'cake'. Strict quality standards and guidelines in biosolids treatment processes make them extremely safe. The risk of disease via pathogens or environmental contamination is extremely low.*

# HOW PEOPLE FEEL AFTER SEEING MORE INFORMATION

When a description is shown, positivity towards biosolids increases significantly (doubling), while the proportion who are negative remains at a similar level. In other words, more information is a good thing.

## Sentiment towards use of biosolids in the local area (%)

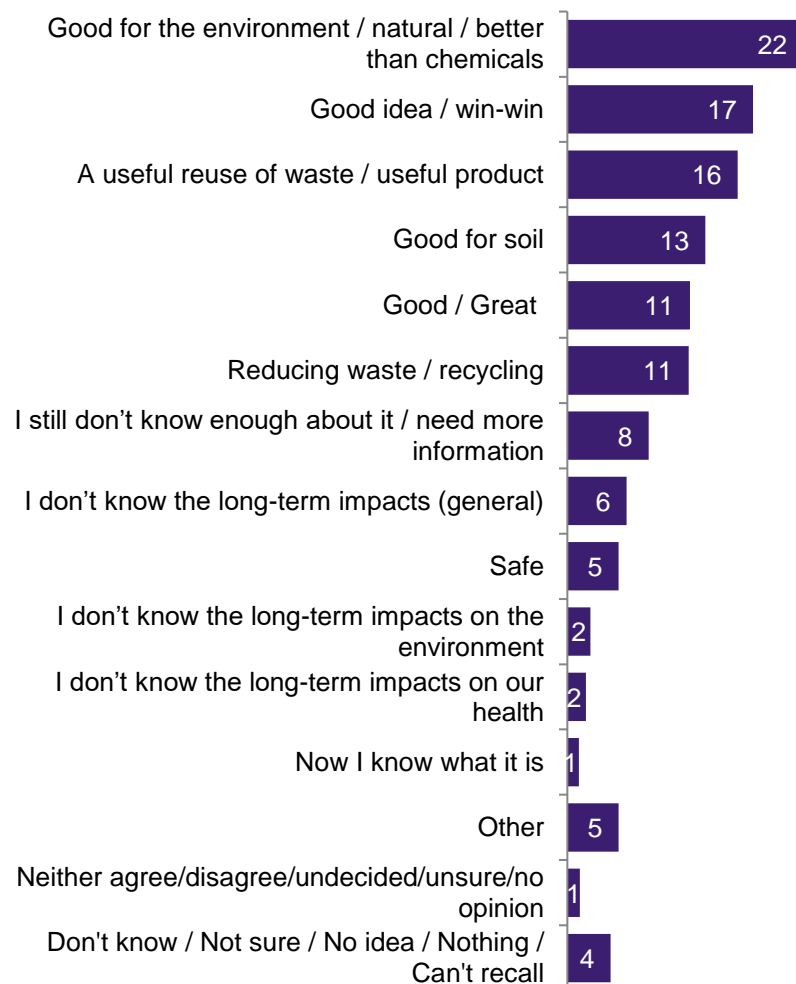


# REASONS FOR SENTIMENT TOWARDS BIOSOLIDS

Benefits to the environment (more natural than alternatives), beneficial reuse, soil improvement and reducing waste are key reasons given for positive perceptions. Lack of information, safety concerns and lack of knowledge about long term impacts are key reasons given by those who are negative or neutral.

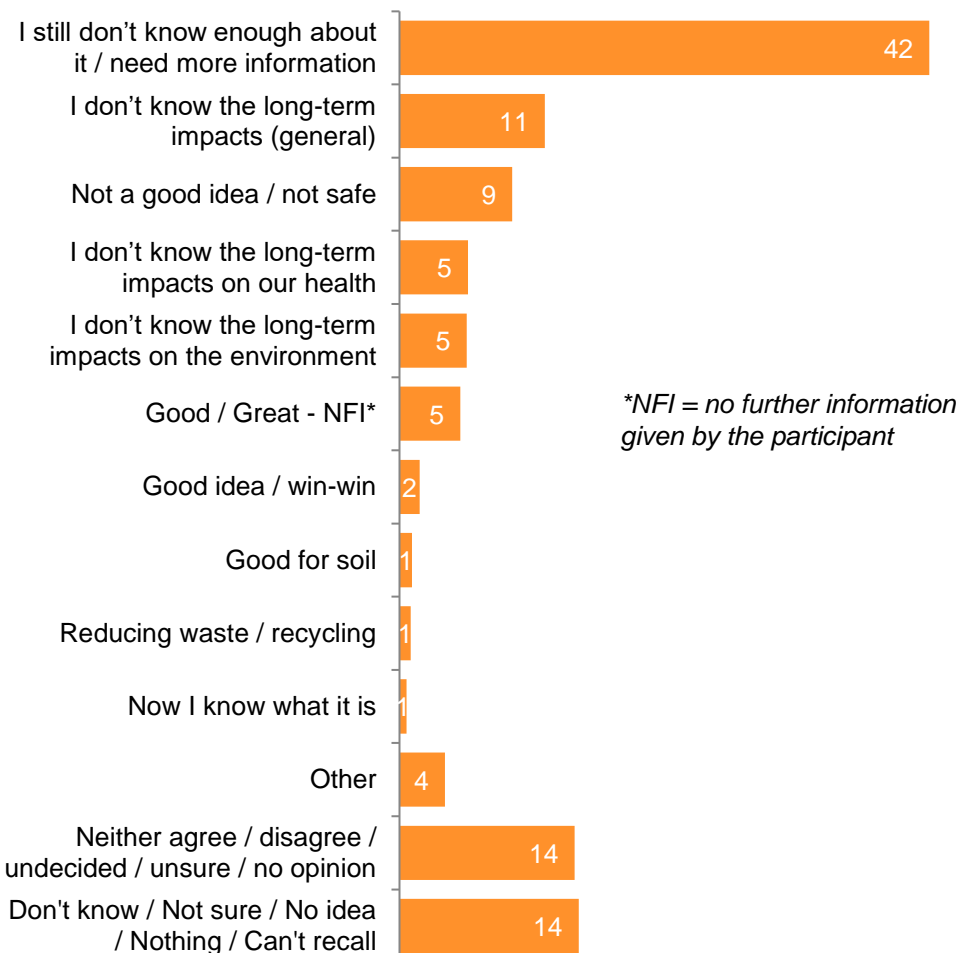
## ALL WHO ARE POSITIVE

### % coded mentions – all who are positive



## ALL WHO ARE NEGATIVE OR NEUTRAL

### % coded mentions – all who are neutral or negative



\*NFI = no further information given by the participant



# AWARENESS AND KNOWLEDGE OF BIOSOLIDS: 2010 VS 2020

Awareness, understanding and positivity towards biosolids have all increased overall since 2010.

2010	2020
<p><i>The 2010 survey found that:</i></p> <ul style="list-style-type: none"><li>◆ Overall, <b>33% of participants had heard of the term 'biosolids'</b>.</li><li>◆ <b>Less than a quarter (22%) of the general community</b> had heard of 'biosolids' before, while <b>45% of the 'affected' community</b> was aware of the term 'biosolids'.</li><li>◆ Those who had heard of biosolids before most commonly defined it as <b>"broken down; recycled or treated waste"</b> (40%) or <b>"it is or can be used like a fertiliser"</b> (10%)</li><li>◆ <b>A fifth (19%)</b> who had heard of the term <b>didn't know what biosolids are</b>.</li><li>◆ After being shown a definition of what biosolids are, <b>around two-thirds (67%) expressed feeling positive towards biosolids</b>.</li></ul>	<p><i>Our 2020 survey found that:</i></p> <ul style="list-style-type: none"><li>◆ Overall awareness of biosolids is now <b>45%</b>, up 12% from 2010.</li><li>◆ <b>The difference in awareness levels between Biosolids Neighbours and the general community has evened out</b> (45% awareness for general community, and 46% awareness for Biosolids Neighbours) – but this may be due to the broader classification of Neighbours in 2020.</li><li>◆ <b>Understanding of the definition of biosolids appears to have become more refined</b>, with the top definition of biosolids being "solid sewage waste / organic matter" (41%), followed by "recycled from sewage" (18%).</li><li>◆ However, <b>the proportion of participants who have heard of biosolids but don't know or can't recall what it is remains roughly the same (17%)</b>.</li><li>◆ <b>Expressed positivity towards biosolids has increased</b>, with almost three-quarters (73%) of participants feeling positive towards biosolids after seeing a definition.</li></ul>

# WHERE BIOSOLIDS FIT INTO THE BIGGER PICTURE

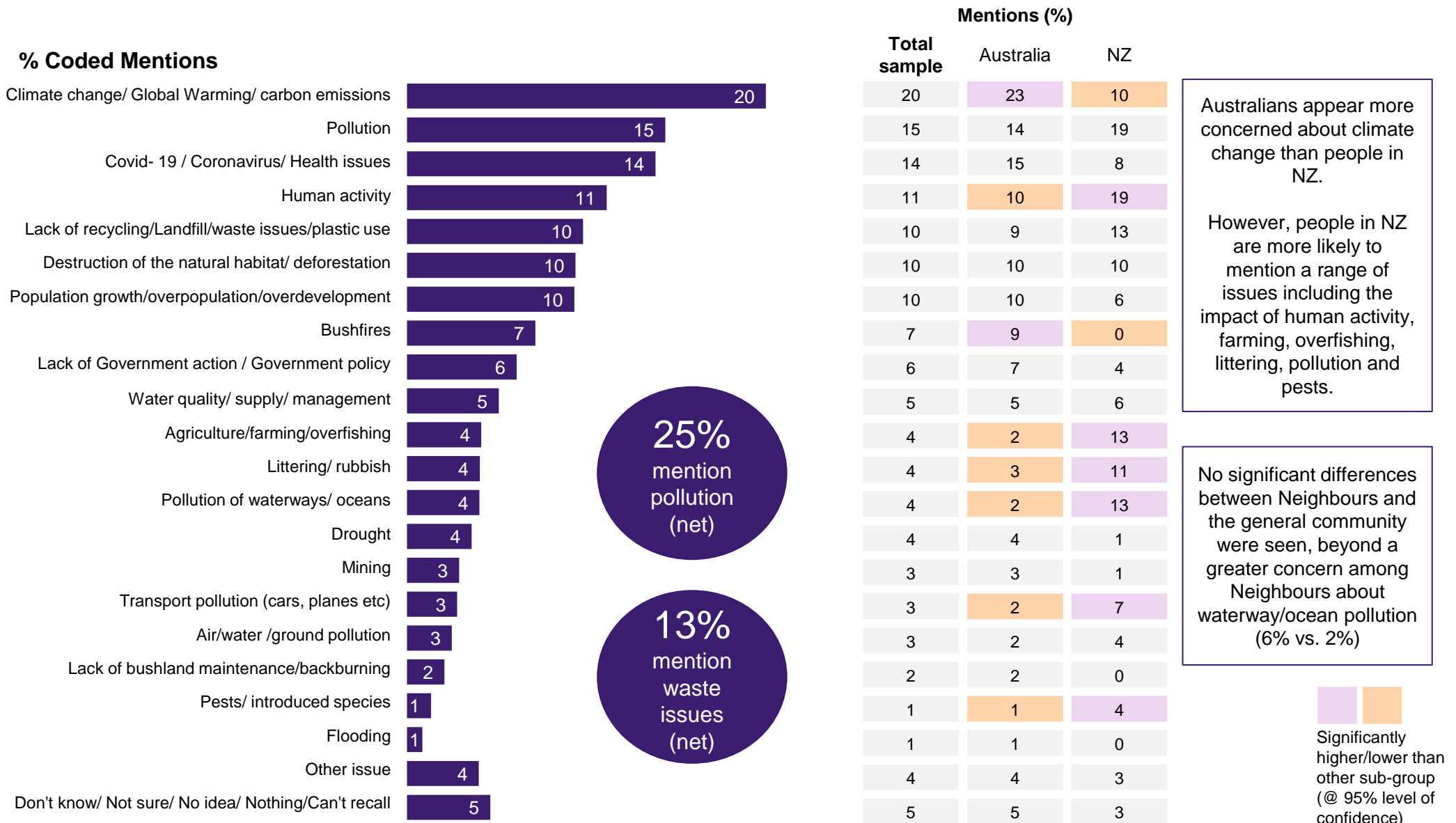


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**To be effective, communications about biosolids should aim to align with the topics and issues of greatest interest and concern to people. This section helps identify what these might be.**

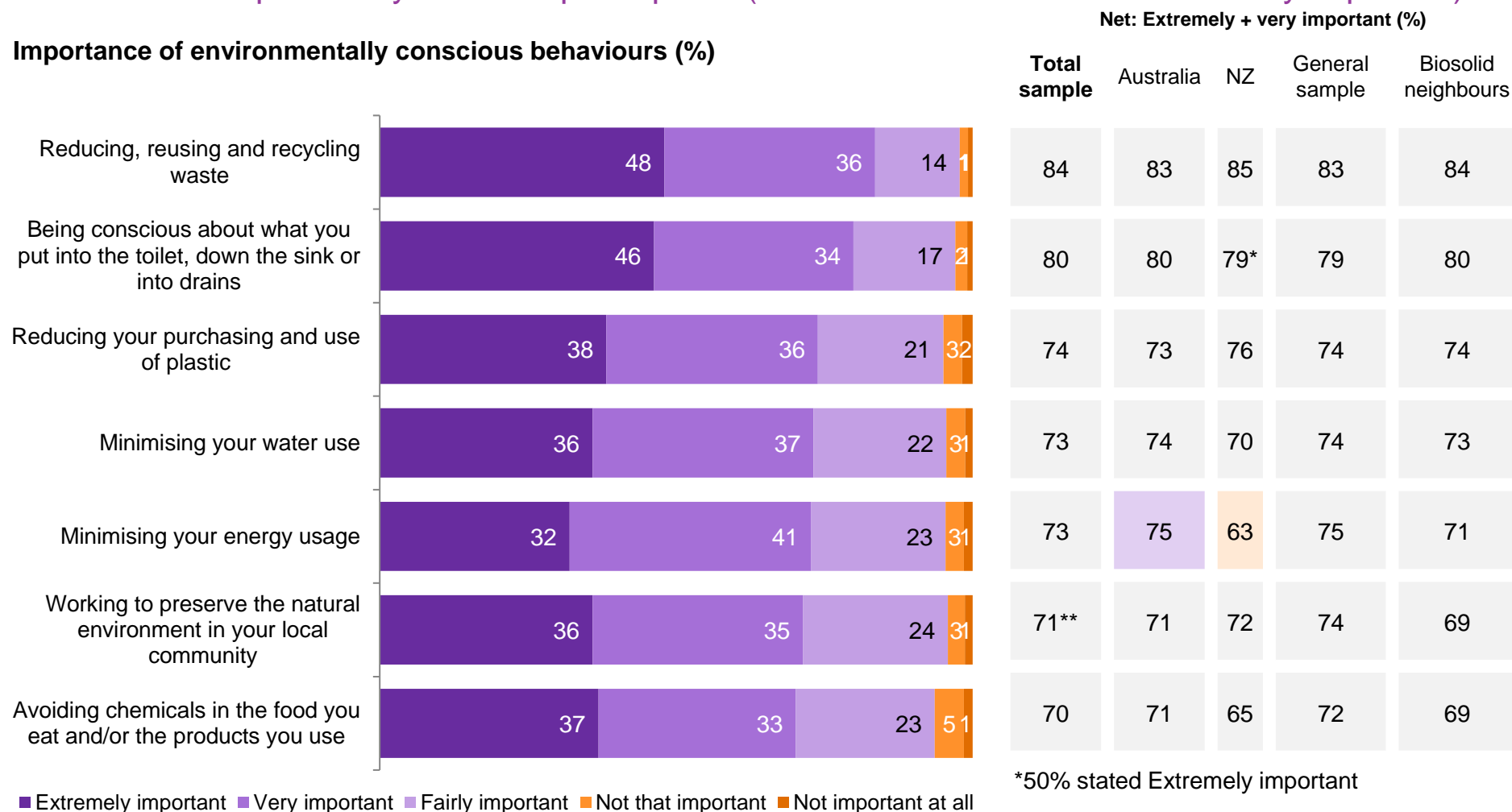
# ENVIRONMENTAL ISSUES OF MOST CONCERN

When asked what they think are the biggest environmental issues facing Australia and New Zealand, climate change, pollution, pathogens, the impact of human activity, and lack of recycling emerge strongly.



# IMPORTANCE OF ENVIRONMENTALLY CONSCIOUS BEHAVIOURS

Participants answering the online survey were also asked to rate the importance of a number of environmentally conscious behaviours. Recycling and being conscious about what goes into the sewers were rated as important by the most participants (almost half rated each as extremely important).



\*\* In 2010, participants were asked how important the preservation of the natural environment in their local community was – 95% stated it was important. In 2020 we made this statement more of an action than a view held, which may explain the drop

Significantly higher/lower than other sub-group (@ 95% level of confidence)



# PROFILING 'BEING CONSCIOUS WHAT GOES IN TOILET/ DRAINS'

Females and those aged 65+ more likely to consider it extremely important to consider what goes into the toilet or down the drains – indicating these groups are potentially more receptive to this messaging.

	Total sample	Country		Australian location					Location description		Biosolid proximity	
		Australia	NZ	NSW/ACT	Vic	Qld	WA	SA	Metro area	Regional/Rural	General community	Biosolid neighbour
Sample: n=	1,113	915	198	308	239	184	88	68	731	382	562	551
Extremely important	46	45	50	41	52	48	43	41	45	50	45	48
Very important	34	35	29	38	32	33	34	34	36	29	35	33
Fairly important	17	17	18	18	14	15	19	26	17	18	17	17
Not that important/ not at all	3	3	3	4	2	4	5	0	3	3	4	2

	Total sample	Gender		Age					Children under 13yrs		Maori/Iwi		Indigenous		Born overseas		Parents born overseas	
		Male	Female	18-34	35-44	45-54	55-64	65+	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Sample: n=	1,113	524	588	274	217	217	267	238	274	839	20	178	30	1,083	308	805	46	54
Extremely important	46	42	50	40	43	47	50	57	43	47	54	50	29	47	49	45	48	45
Very important	34	36	31	35	31	36	36	30	33	34	37	28	47	33	34	34	34	33
Fairly important	17	18	16	20	25	14	13	11	21	16	9	19	21	17	16	18	16	18
Not that important/ not at all	3	3	3	5	2	3	1	2	2	3	0	3	4	3	1	3	2	4

Q2. In your personal opinion, how important are each of the following activities? // Base: All ONLINE participants

# SCOPE OF ACCEPTABLE BIOSOLIDS USES AND FORMATS



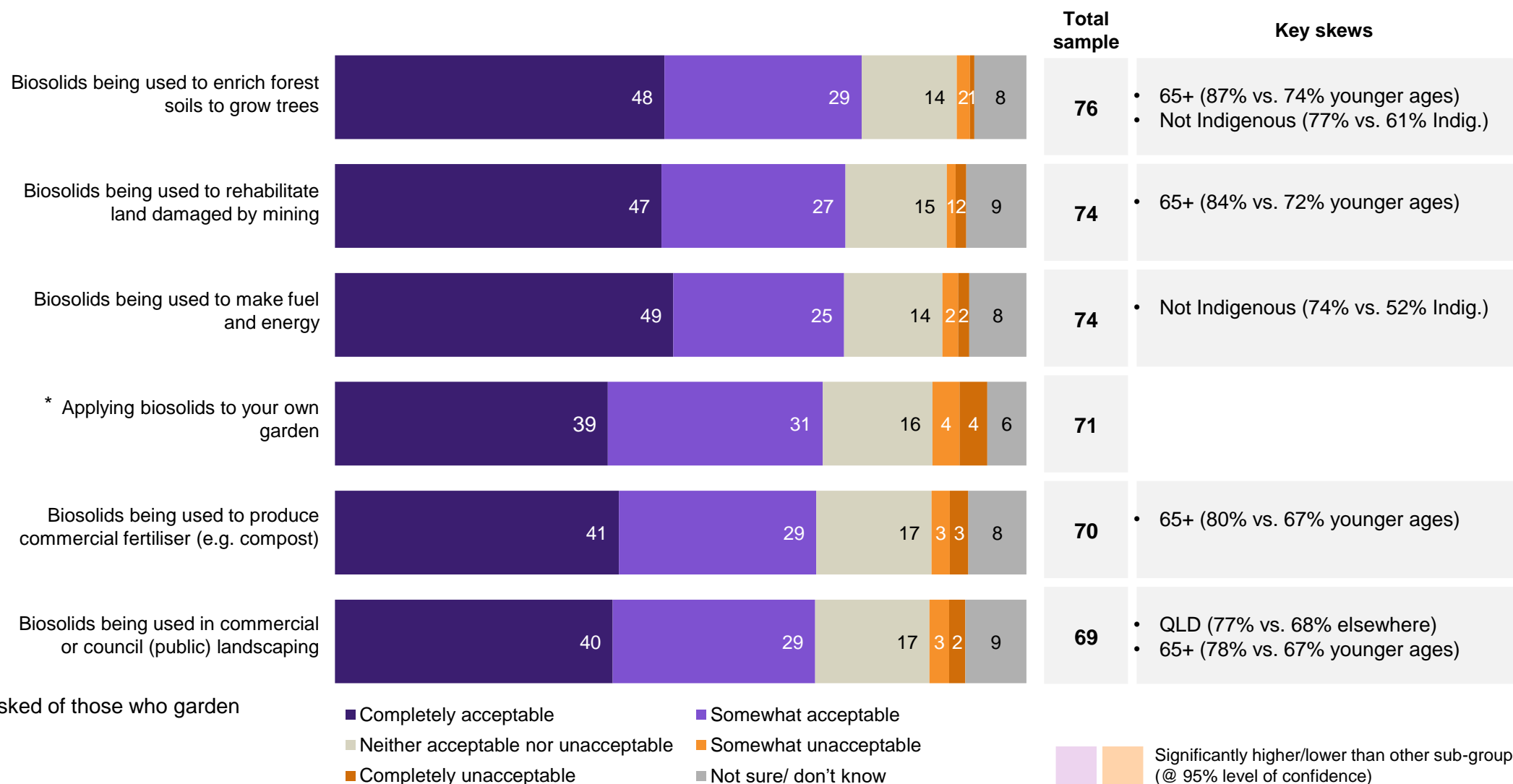
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# ACCEPTABILITY OF DIFFERENT BIOSOLIDS USES – TOP MENTIONS

All potential uses explored in the survey are reasonably well supported (including those on the following page). Use in forestry, land rehabilitation and fuel/energy have the highest acceptability.

Acceptability of biosolids uses (%)

Acceptable (%)



# ACCEPTABILITY OF DIFFERENT BIOSOLIDS USES (CONT'D)

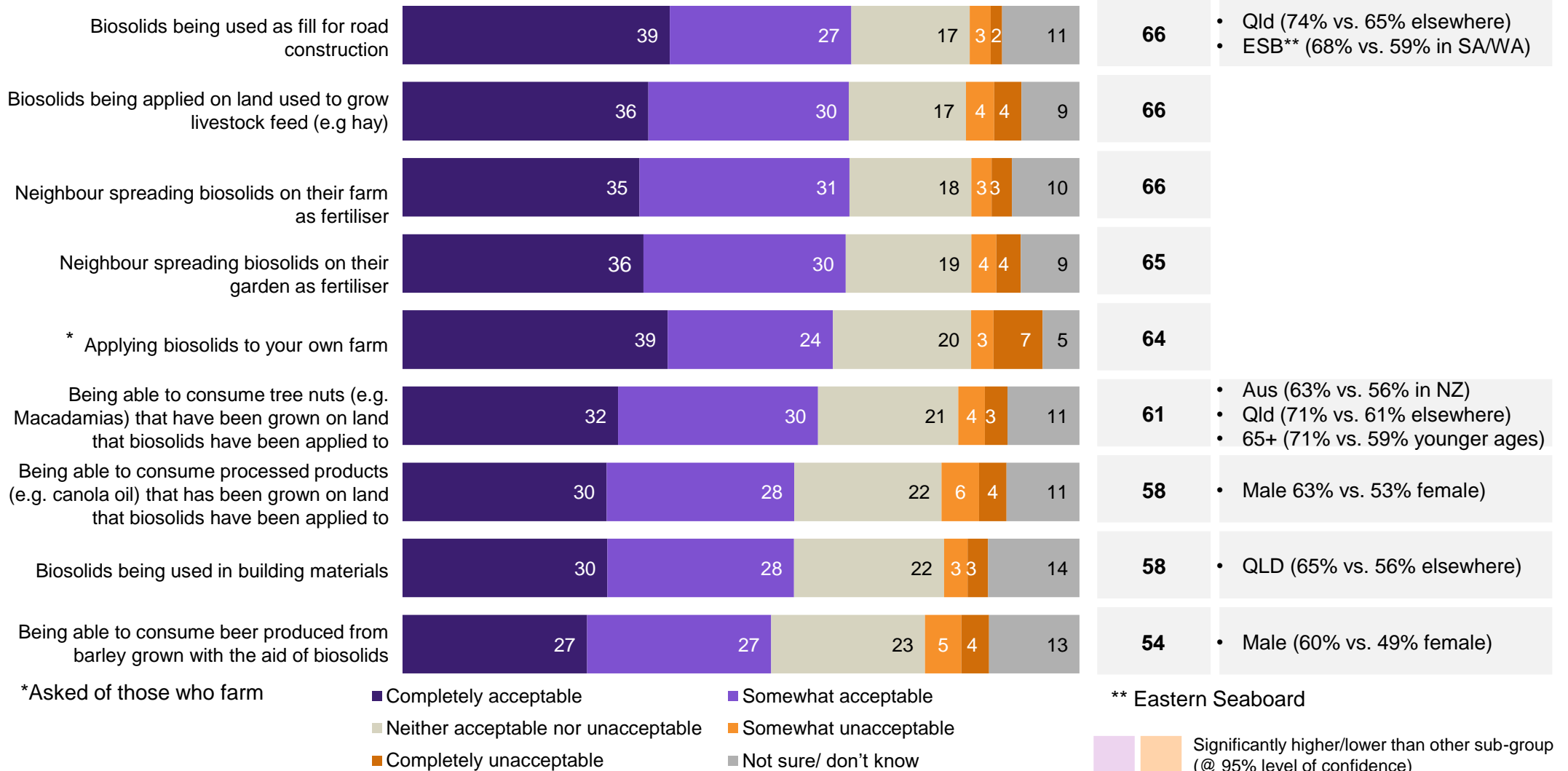
Participants are a little more mixed in their opinions of biosolids use to grow food – though over half of participants found each of these uses acceptable.

## Acceptability of biosolids uses (%)

## Acceptable (%)

## Total sample

## Key skews



# ACCEPTABILITY OF BIOSOLIDS USE: 2010 VS 2020

Levels of acceptability of biosolids uses for land application appear to have dropped very slightly from 2010, though the majority still consider this use acceptable.

2010	2020
<p><i>The 2010 survey found that:</i></p> <ul style="list-style-type: none"><li>◆ Generally <b>there was majority agreement and implied support for land application use of biosolids</b>, including for growing food products (averaging around 78%)</li><li>◆ <b>Participants most agreed that it was appropriate to use biosolids:</b><ul style="list-style-type: none"><li>○ To improve soil and encourage land growth on land damaged by mines (85%)</li><li>○ As a fertiliser for forest soils to grow trees (85%)</li><li>○ As a fertiliser for soil in which non-food products are grown (83%)</li></ul></li><li>◆ Around two-thirds said they would be likely to buy foods grown on ground where biosolids has been applied—e.g. grain food or products (67%) or dairy and meat products where livestock have grazed on land treated with biosolids (67%)</li></ul>	<p><i>Our 2020 survey found that:</i></p> <ul style="list-style-type: none"><li>◆ Although there remains majority support for land application use of biosolids, levels of acceptability appear slightly lower*</li><li>◆ Participants still see <b>using biosolids as a fertiliser to enrich soil (76%) and to rehabilitate land damaged by mining (74%), as the most appropriate uses</b></li><li>◆ <b>Making fuel/energy is also seen as highly acceptable (74%)</b></li><li>◆ <b>Around two-thirds see various forms of biosolids being used to grow food products as acceptable, on par with findings from the 2010 survey.</b></li></ul>

# BIOSOLIDS FORMAT PREFERENCES FOR USE ON FOOD CROPS

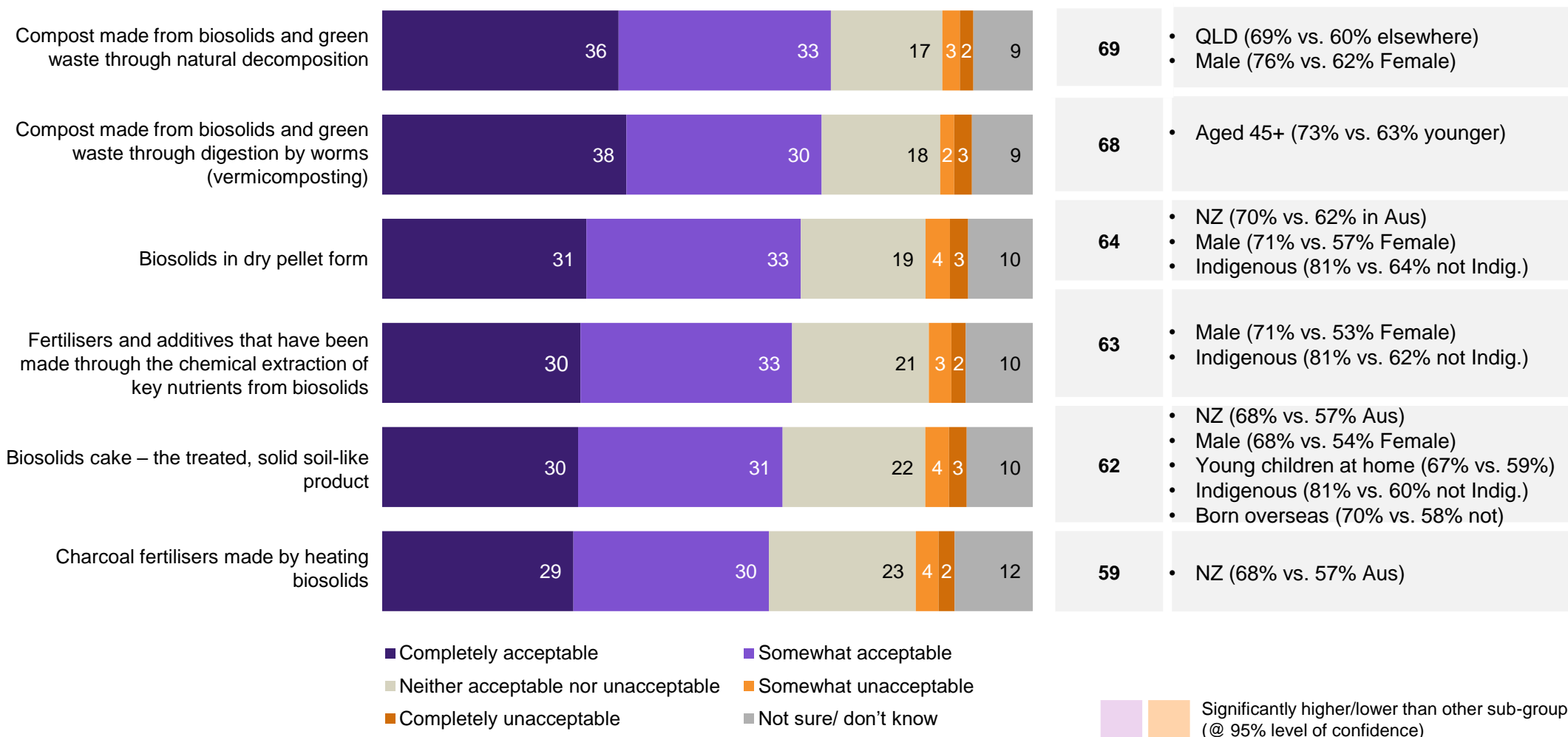
All formats were acceptable to the majority of participants, with composts acceptable to the largest proportion. However, one-in-ten are unable to answer.

Acceptability of food being grown in each biosolids format (%)

Acceptable (%)

Total sample

Key skews





# MESSAGELAB

Newgate's proprietary approach for establishing which messages about biosolids have the greatest power to shift opinion



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# POTENTIAL MESSAGING AREAS – WHAT HAVE WE LEARNED SO FAR?

- ◆ **Climate change, pollution, the impact of human activity, landfill and waste** are top-of mind as issues for people
- ◆ **Being conscious about what goes into sewers** comes up as important after prompting
- ◆ Those with a positive perception of biosolids after seeing brief description focus on:
  - ◆ **Fewer chemicals (by which they mean biosolids is a natural alternative to chemical/artificial fertilisers)**
  - ◆ **Beneficial reuse of wastes**
  - ◆ **Soil improvement**
- ◆ **Safety concerns and lack of long-term impacts** are the key concerns cited by those who are neutral or negative
- ◆ **Low levels of rejection** for use of biosolids in food crops in any format.

# INTRODUCTION TO MESSAGELAB

Using Newgate's proprietary message-testing methodology, we examined how public opinion shifted when exposed to messages for and against the use of biosolids in their local area. This simulation helps establish the most important aspects to communicate and issues address in messaging.

**MessageLab** evaluates the positive and negative message statements tested in the survey ( "what others have said" *for* and *against* the use of biosolids for beneficial purposes in the local area) to assess the 'power' of each message in shifting sentiment towards the topic:

- ◆ A large negative shift indicates an issue that communications about the topic should address.
- ◆ A large positive shift indicates an aspect that communications about the topic should promote.

## How MessageLab works

Participants were asked to rate their sentiment towards the possibility of biosolids being used in their local area on a five-point scale (very negative to very positive) at a number of points in the survey:

- ◆ After they were prompted with the name 'biosolids' (the **baseline measure**) (Q9);
- ◆ After they had seen a battery of **positive messages** about biosolids (Q16); and
- ◆ After they had seen a battery of **negative messages** about biosolids (Q18).

The analysis uses advanced machine learning techniques to model the relative potential of the messages to shift opinions, producing a **Persuasion Score for each message**. The Persuasion Scores for each battery of messages total 100%, where the higher the score, the more persuasive the message was found to be.

We report the Persuasion Score for each message alongside the **Credibility Score** for each message, which is how strongly participants agree that the message is a good reason for or against biosolids being used in their local area. The recommendations consider findings from both the Credibility and Persuasion Scores.

## The MessageLab scenarios tested

The order in which positive and negative message batteries have been tested with participants has been randomised across the interviews. This helps remove ordering bias and also enables us to determine the most effective messaging to use in different scenarios:

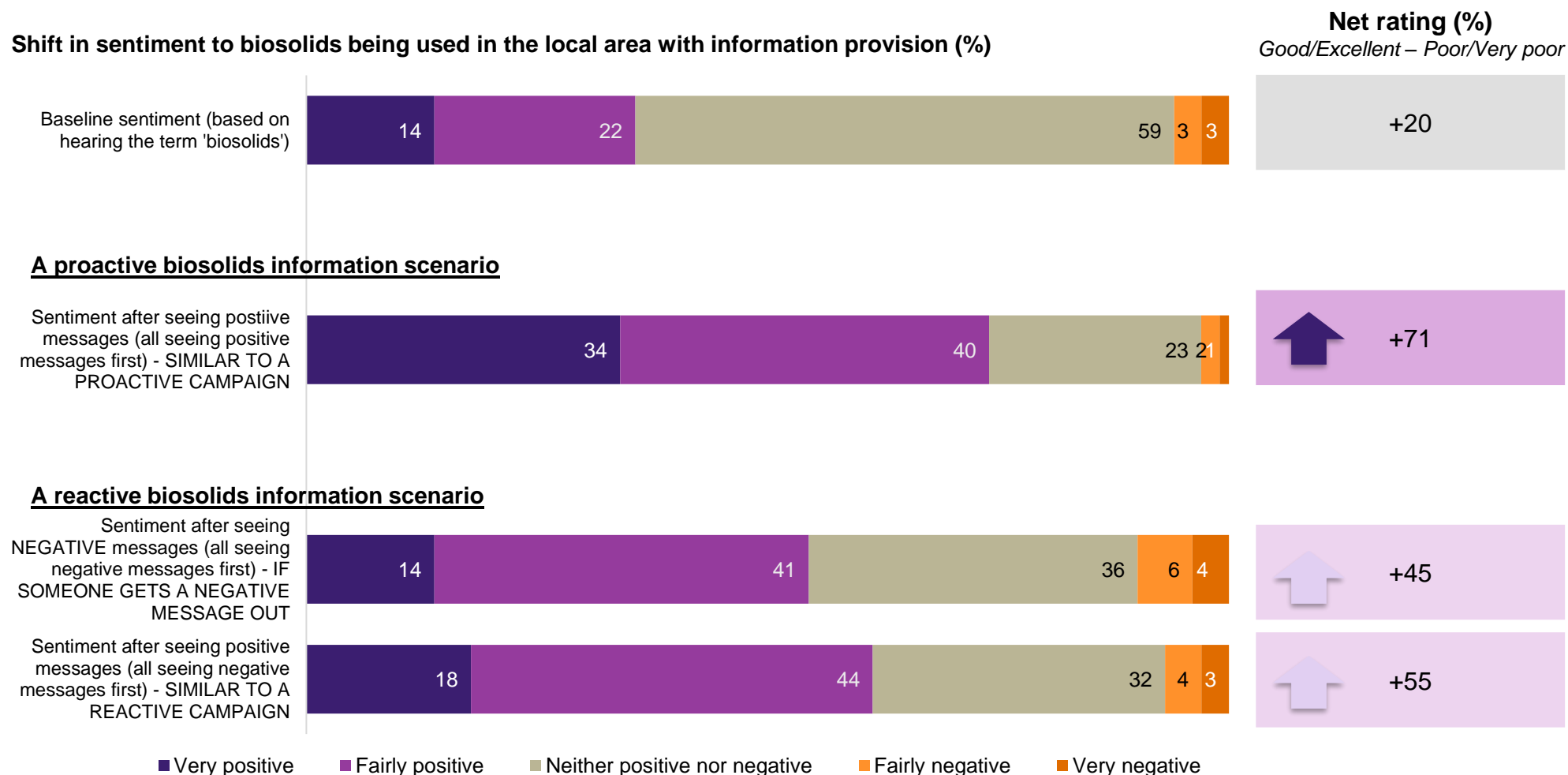
- ◆ **In a proactive campaign about biosolids.** By looking at the shift metrics for participants who saw the positive messages first, we can look at which positive messages have the greatest power to shift community sentiment towards biosolids among those who have seen little information about biosolids otherwise.
- ◆ **In a reactive campaign about biosolids.** By looking at the shift metrics for participants who saw the negative messages first, we can look at which positive messages have the greatest power to shift community sentiment towards biosolids among those who have seen something negative about them first.

As part of this scenario, we have also looked specifically at which negative messages have had the biggest impact on participant perceptions and which ones should be addressed in messaging.

These scenarios are shown over the following pages.

# THE IMPACT OF INFORMATION ON SENTIMENT

It is clear from this research that seeing/hearing any information about biosolids can help significantly shift sentiment towards them. However, the gains are much reduced if negative messages gain traction first. In sum, all information is good as it helps form (positive) opinion.



Q9. From what you know about biosolids, or only from hearing the name just now, which of the following best sums up your feelings towards the possibility of biosolids being used in your local area? Q12. After reading this description, which of the following best sums up your feelings towards the possibility of biosolids being used in your local area? Q16. After seeing more information about a topic some people may change their opinion. Q18. After seeing more information about a topic some people may change their opinion. Which of the following now best sums up your feelings towards the possibility of biosolids being used in your local area? // Base: all participants (n=1,255), all seeing positive messages first (n=613). All seeing negative messages first (n=642)

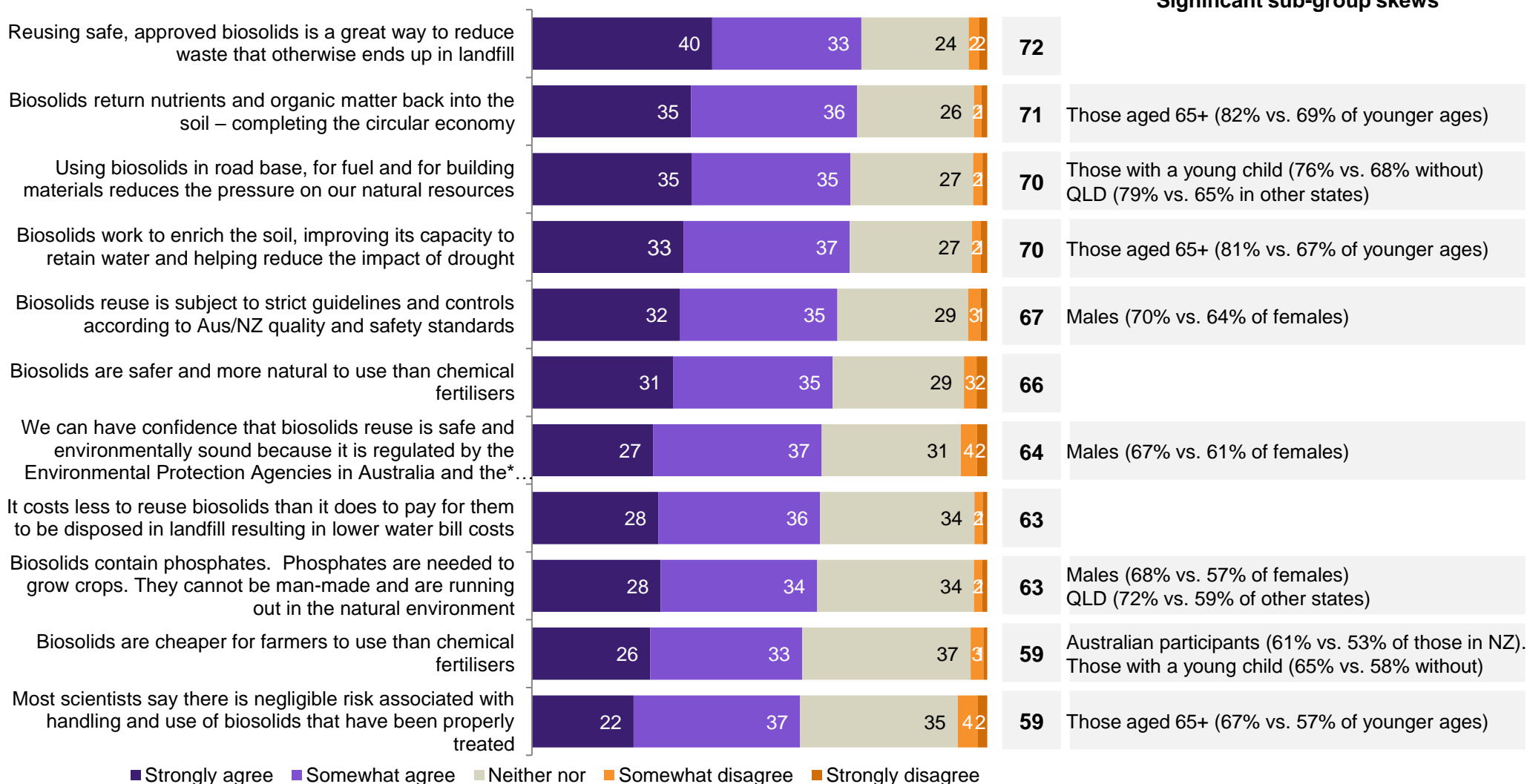


# THE CREDIBILITY OF THE POSITIVE MESSAGES TESTED

There is good support for the messages tested – however many are in soft agreement or unsure, suggesting an opportunity to provide more information to mitigate concerns (especially around waste reduction, the circular economy and other reuse options).

## Agreement as a good reason FOR biosolid use (%)

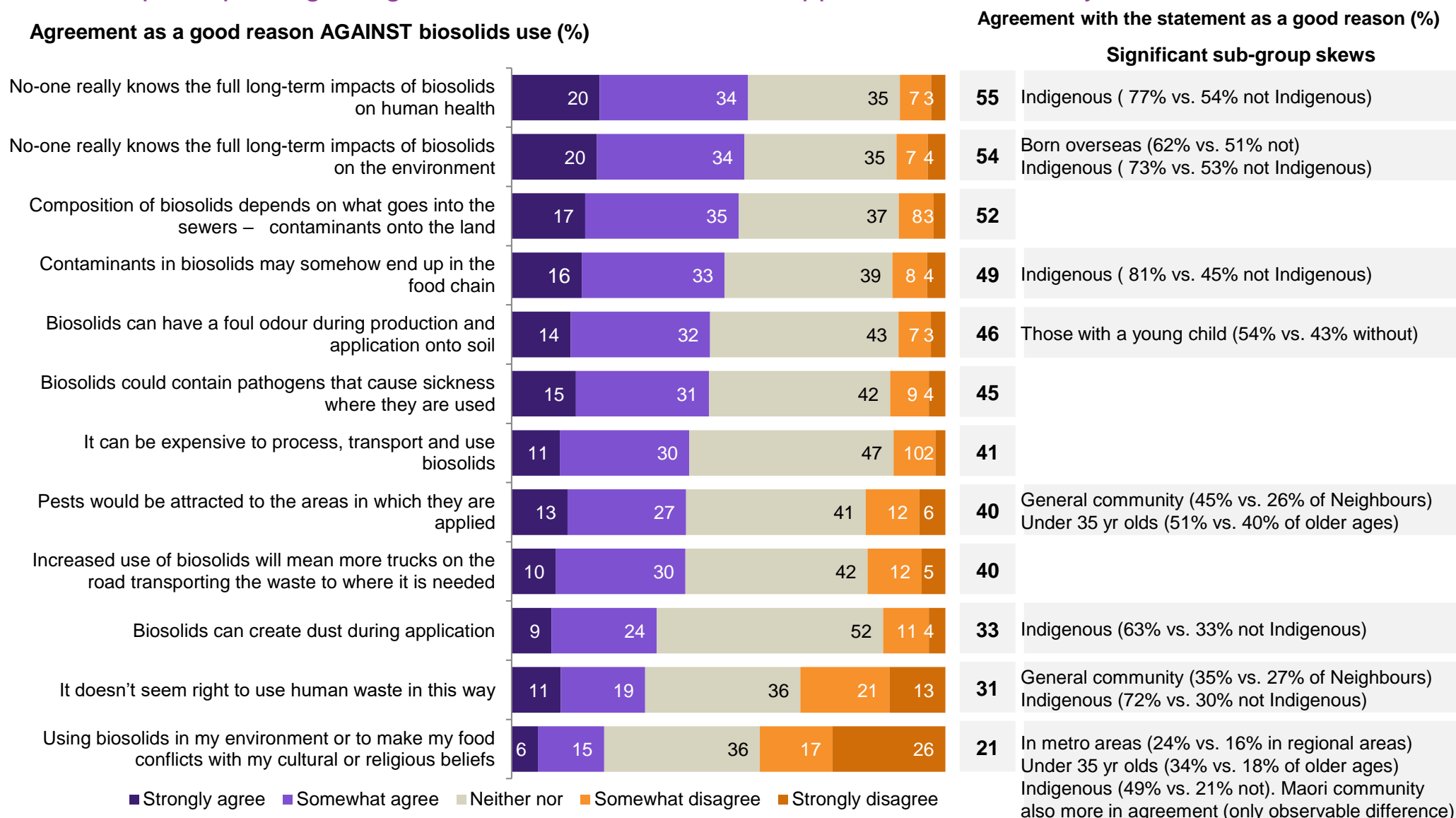
## Agreement with the statement as a good reason (%)



\* ...Ministry for the Environment in NZ

# THE CREDIBILITY OF NEGATIVE MESSAGES TESTED

The impacts on human health, the environment and the effect of what goes into the sewers are the key reasons participants give against local biosolid use, but support is soft and many are unsure.





# REACTIONS TO MESSAGES ABOUT BIOSOLIDS: 2010 VS 2020

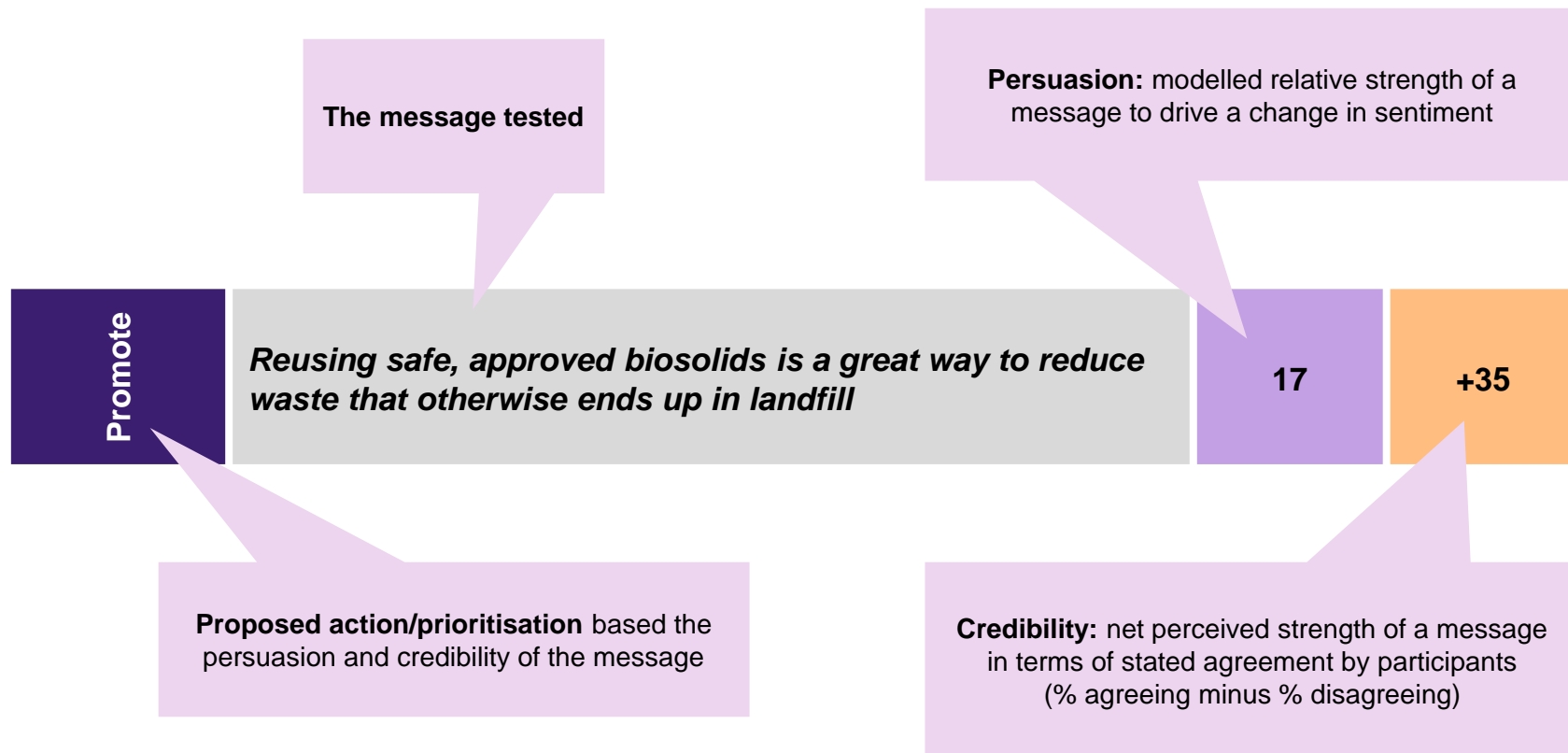
Similar messages receive the highest levels of support and provoke the greatest concern. However, concerns about biosolids contamination on land and impact on the environment are higher now than in 2010.

2010	2020
<p><i>The 2010 survey found that:</i></p> <ul style="list-style-type: none"><li>◆ Participant agreement was highest on statements saying that <b>'use of biosolids on land recycles nutrients and organic matter back into the soil' (88%)</b> and that biosolids <b>'are an effective way of using by-products' (85%)</b></li><li>◆ The majority (58%) were concerned about the <b>effect of biosolids application on their families' health</b>, with those in affected communities most wanting to know that biosolids is safe to use (24%)</li><li>◆ Of the perceived risks of biosolids, participants had the highest level of agreement to the idea that:<ul style="list-style-type: none"><li>○ Biosolids can <b>affect human health and safety</b> (31%)</li><li>○ There are inadequate regulations governing biosolids (31%)</li><li>○ Biosolids causes <b>bad odours</b> (29%)</li></ul></li></ul>	<p><i>Our 2020 survey found that:</i></p> <ul style="list-style-type: none"><li>◆ The <b>highest levels of agreement</b> are on par with 2010, with <b>return of nutrients and organic matter back to the soil</b> and <b>soil improvement</b> strongly supported (71% and 70% agreement, respectively). Biosolids as <b>'road base'</b> and <b>'waste reducer'</b> are also strongly supported (70% and 72% respectively).</li><li>◆ <b>Concern about the potential effects of biosolids on human health remains high</b>, with over half (55%) agreeing that no one really knows the full long-term impact of biosolids on health</li><li>◆ <b>Bad odour is still seen as a negative</b> (46% agreement), <b>but other concerns</b>, such as the impact of biosolids on the environment (54%) and contamination of biosolids on the land (52%) <b>now have higher levels of agreement than they did in 2010.</b></li></ul>

OK, so now we know which messages participants **say** they most buy into as reasons for and against biosolid beneficial use in their local area, but which messages are **really driving a shift** in sentiment?

# HOW TO INTERPRET THE FOLLOWING MESSAGELAB CHARTS

The diagram below explains how to read the MessageLab results that follow.



# EVALUATING THE IMPACT OF POSITIVE PROACTIVE MESSAGES

Minimisation of waste to landfill and soil improvement are priorities to promote, with lower water bill costs and messaging about safety, regulation and guidelines also important, but requiring more evidence to boost credibility.

		Persuasion (modelled impact %)	Credibility (stated agreement %)
<b>Priority to promote</b> (higher persuasion and credibility)	Reusing safe, approved biosolids is a great way to reduce waste that otherwise ends up in landfill	15%	76
	Biosolids work to enrich the soil improving its capacity to retain water and helping reduce the impact of drought	14%	74
<b>Strengthen and promote</b> (higher persuasion, slightly lower credibility)	Biosolids are safer and more natural to use than chemical fertilisers	19%	70
	It costs less to reuse biosolids than it does to pay for them to be disposed in landfill resulting in lower water bill costs	16%	67
	We can have confidence that biosolids reuse is safe and environmentally sound because it is regulated by the Environmental Protection Agencies in Australia and the Ministry for the Environment in NZ	15%	66
	Biosolids reuse is subject to strict guidelines and controls according to [COUNTRY] quality and safety standards	10%	70
<b>Secondary messages to consider</b> (lower persuasion)	Biosolids contain phosphates. Phosphates are needed to grow crops They cannot be man made and are running out in the natural environment	5%	65
	Using biosolids in road base for fuel and for building materials reduces the pressure on our natural resources	4%	71
	Biosolids return nutrients and organic matter back into the soil - completing the circular economy	2%	75
	Biosolids are cheaper for farmers to use than chemical fertilisers	1%	64
	Most scientists say there is negligible risk associated with handling and use of biosolids that have been properly treated	1%	63

Q15. The following statements are positive things that others, such as scientists and industry specialists, have said about biosolids. Please read the following statements and rate how much you agree or disagree with each as a good reason for biosolids to be used for beneficial purposes in your local area. // Base: All participants seeing positive messages first- using their sentiment rating from Q9 and Q16 (n=613)

# KEY NEGATIVES TO ADDRESS

Concerns about what ends up in the sewers, pathogens causing sickness and lack of knowledge about long-term health impacts are the key concerns to address. It is worth noting that these primary concerns relate to unknowns and uncertainties.

		Persuasion (modelled impact %)	Credibility (stated agreement %)
<b>Priorities to address</b> (highest persuasion)	The composition of biosolids depends so much on what goes into the sewers - we could end up putting contaminants onto the land	22%	55
	No one really knows the full long-term impacts of biosolids on human health	14%	56
	Biosolids could contain pathogens that cause sickness where they are used	14%	48
	It doesn't seem right to use human waste in this way	19%	31
<b>Secondary priorities to address</b> (lower persuasion)	Pests would be attracted to the areas in which they are applied	7%	41
	Contaminants in biosolids may somehow end up in the food chain	5%	52
	Biosolids can create dust during application	5%	36
	Using biosolids in my environment or to make my food conflicts with my cultural or religious beliefs	5%	23
<b>Issues that are less important to address</b> (lowest persuasion)	No one really knows the full long-term impacts of biosolids on the environment	3%	56
	Increased use of biosolids will mean more trucks on the road transporting the waste to where it is needed	3%	45
	Biosolids can have a foul odour during production and application onto soil	0%	46
	It can be expensive to process, transport and use biosolids	0%	44

Q17. The following statements are negative things that others, such as scientists and industry specialists, have said about biosolids. Please read the following statements and rate how much you agree or disagree with each as a good reason for biosolids **not** to be used for beneficial purposes in your local area. // Base: All participants seeing negative messages first using their sentiment rating from Q9 and Q18 (n=642)

# EVALUATING THE IMPACT OF POSITIVE REACTIVE MESSAGES

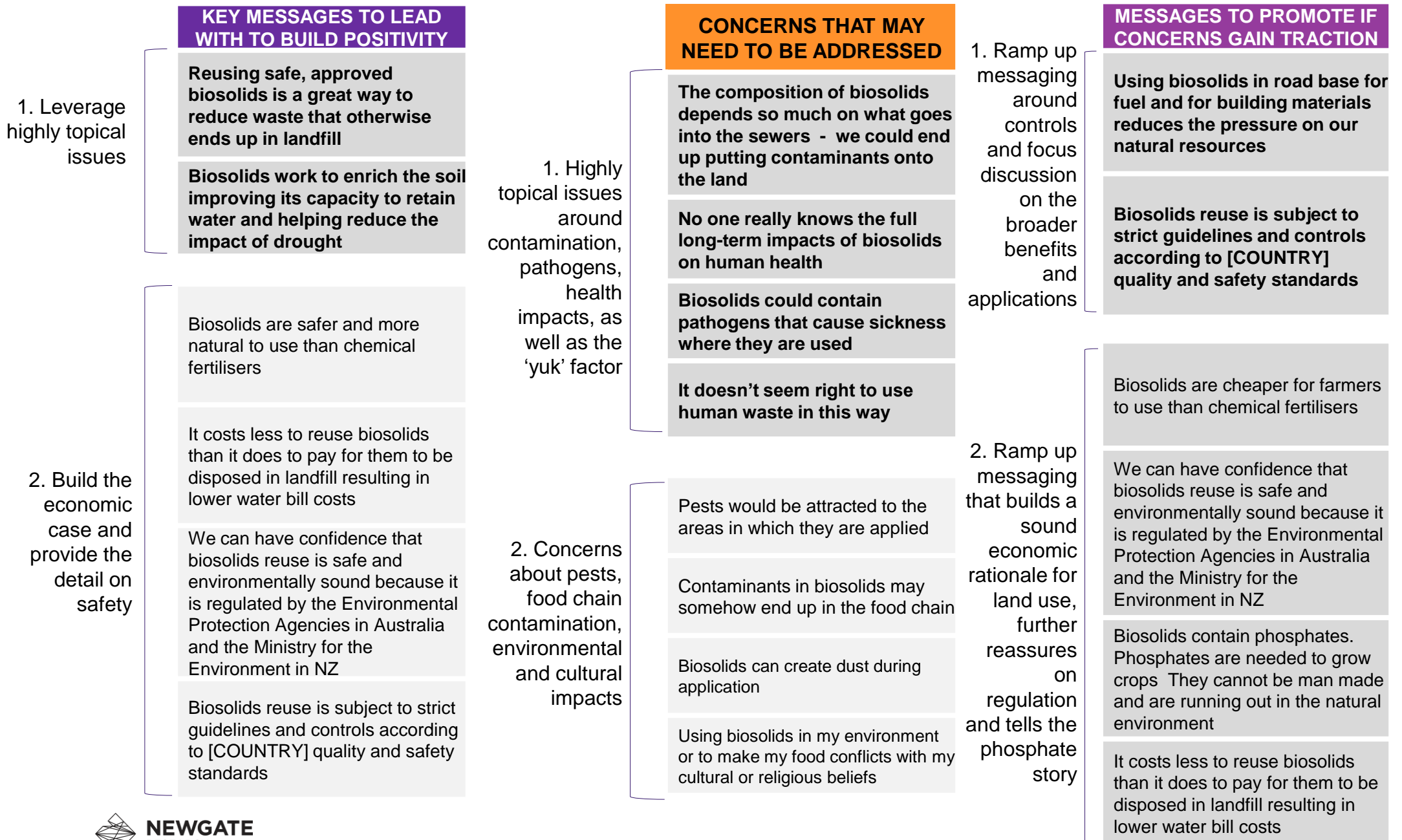
If people see negative messages first, positive messaging that promotes reuse for non-agricultural purposes or reinforces the strict guidelines/controls in place make the most difference, followed by the economic argument.

		Persuasion (modelled impact %)	Credibility (stated agreement %)
<b>Priority to promote</b> (higher persuasion and credibility)	Using biosolids in road base for fuel and for building materials reduces the pressure on our natural resources	32%	69
	Biosolids reuse is subject to strict guidelines and controls according to [COUNTRY] quality and safety standards	17%	64
<b>Strengthen and promote</b> (higher persuasion, slightly lower credibility)	Biosolids are cheaper for farmers to use than chemical fertilisers	16%	55
	We can have confidence that biosolids reuse is safe and environmentally sound because it is regulated by the Environmental Protection Agencies in Australia and the Ministry for the Environment in NZ	7%	61
	Biosolids contain phosphates. Phosphates are needed to grow crops They cannot be man made and are running out in the natural environment	7%	60
	It costs less to reuse biosolids than it does to pay for them to be disposed in landfill resulting in lower water bill costs	6%	60
<b>Secondary messages to consider</b> (lower persuasion, though high credibility)	Reusing safe, approved biosolids is a great way to reduce waste that otherwise ends up in landfill	4%	69
	Biosolids work to enrich the soil, improving its capacity to retain water and helping reduce the impact of drought	4%	66
	Biosolids are safer and more natural to use than chemical fertilisers	4%	62
	Biosolids return nutrients and organic matter back into the soil - completing the circular economy	3%	68
	Most scientists say there is negligible risk associated with handling and use of biosolids that have been properly treated	0%	55

Q15. The following statements are positive things that others, such as scientists and industry specialists, have said about biosolids. Please read the following statements and rate how much you agree or disagree with each as a good reason for biosolids to be used for beneficial purposes in your local area. // Base: All participants seeing negative messages first and then seeing the positive messages using their sentiment rating from Q9 and Q16 (n=642)



# MESSAGELAB OUTCOMES IN SUMMARY



# TARGETING OF MESSAGING ABOUT BIOSOLIDS

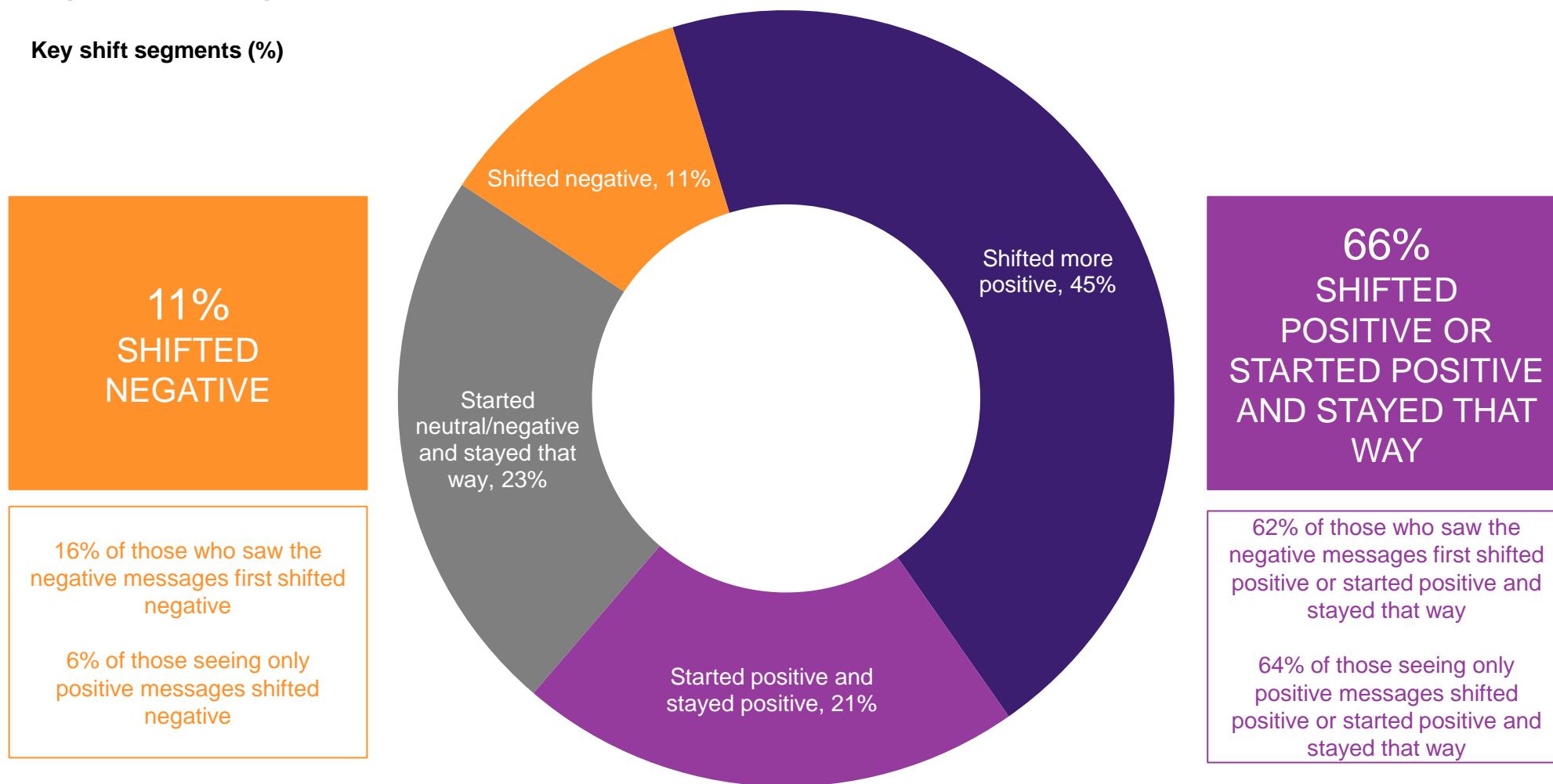


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# WHERE DID PEOPLE END UP AFTER SEEING THE POSITIVE MESSAGES?

Overall, two-thirds of participants either shifted to a more positive sentiment or started out positive and stayed that way. Only a minority shifted to the negative – and this effect is magnified if they saw the negative messages first.

Key shift segments (%)



# PROFILING THE KEY SHIFT SEGMENTS – DEMOGRAPHICS

Some clear skews emerge versus other segments.

## POSITIVE SHIFTERS (45%) (n=570)

- Live in QLD (23% vs. 17% across other segments)
- Aged 65+ (23% vs. 15% across other segments)



## STAYED NEUTRAL/ NEGATIVE (23%) (n=288)

- Female (59% vs. 49% across other segments)
- Aged 35-54 (45% vs. 33% across other segments)



## STARTED & STAYED POSITIVE (21%) (n=260)

- Male (62% vs. 45% across other segments)
- Indigenous (8% vs. 1% across other segments)



## NEGATIVE SHIFTERS (11%) (n=137)

- Born overseas (37% vs. 26% across other segments)
- Aged 18-34 (40% vs. 29% across other segments)
- Have a child aged under 13 (31% vs. 23% across other segments)



# PROFILING THE KEY SHIFT SEGMENTS - MESSAGING

The statements with highest levels of agreement. This provides some indicative steer on messaging areas most likely to resonate with each group/those which represent the biggest issues to address.

## POSITIVE SHIFTERS (45%) (n=332)

- 51% in strong agreement with 'Reusing safe, approved biosolids is a great way to reduce waste that otherwise ends up in landfill'
- 45% in strong agreement with 'Biosolids return nutrients and organic matter back into the soil – completing the circular economy'



- 45% in strong agreement with 'Biosolids work to enrich the soil, improving its capacity to retain water and helping reduce the impact of drought'

## STARTED & STAYED POSITIVE (21%) (n=121)

- 58% in strong agreement with 'Reusing safe, approved biosolids is a great way to reduce waste that otherwise ends up in landfill'
- 55% in strong agreement with 'Biosolids return nutrients and organic matter back into the soil – completing the circular economy'



- 51% in strong agreement with 'Using biosolids in road base, for fuel and for building materials reduces the pressure on our natural resources'

## STAYED NEUTRAL/ NEGATIVE (23%) (n=123)

- 48% in agreement with 'No-one really knows the full long-term impacts of biosolids on human health'
- 47% in agreement with 'No-one really knows the full long-term impacts of biosolids on the environment'



- 43% in agreement with 'The composition of biosolids depends so much on what goes into the sewers – we could end up putting contaminants onto the land'

## NEGATIVE SHIFTERS (11%) (n=37)

- 67% in agreement with 'The composition of biosolids depends so much on what goes into the sewers – we could end up putting contaminants onto the land'
- 65% in agreement with both 'No-one really knows the full long-term impacts of biosolids on human health/ environment'



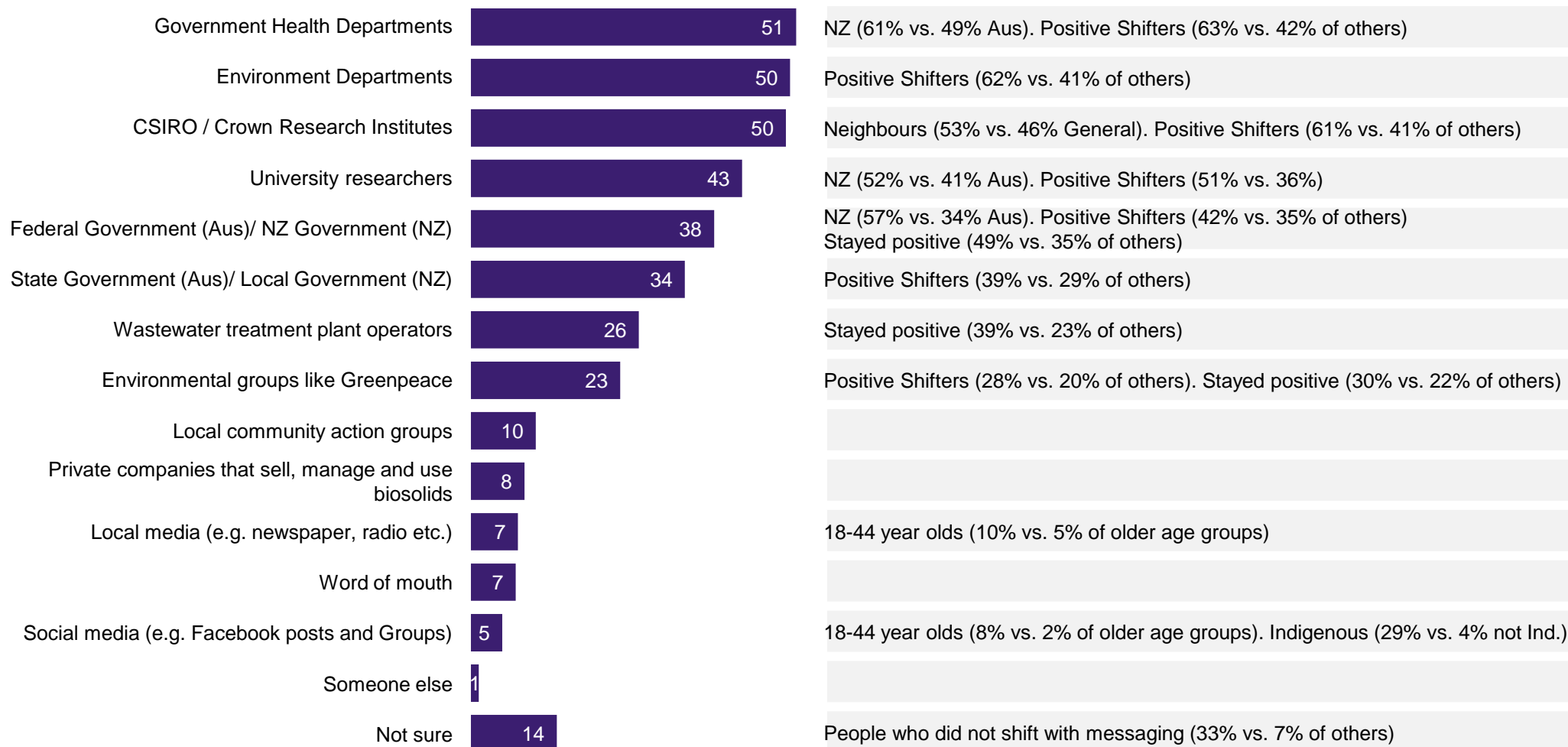
- 64% in agreement with 'Contaminants in biosolids may somehow end up in the food chain'
- 64% in agreement with 'Biosolids could contain pathogens that cause sickness where they are used'

# TRUSTED INFORMATION SOURCES

Half of participants would trust Government Health departments, Environment Departments and Research Institutes the most when it comes to biosolids.

% stating each source of information is trustworthy

Key skews





# APPENDIX



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# PARTICIPANT PROFILE

Gender	%	n
Male	49	583
Female	51	671
Other	0	1

Age	%	n
18-34	30	294
35-54	36	489
55+	34	472

Tenure at current location	%	n
Less than 6 months	0	0
6 months or longer	100	1,255

Demographic characteristics	%	n
I was born overseas	27	343
At least one of my parents was born overseas	46	563
I identify as Aboriginal	3	29
I identify as Torres Strait Islander	1	12
I identify as Kiwi or Maori	12	26
Have child(ren) aged 12 years or under living at home	24	305
Have child(ren) aged over 12 years old living at home	22	284

Educational attainment	%	n
Postgraduate degree	13	154
Graduate diploma / certificate	8	107
Bachelor's degree	24	290
Advanced diploma / diploma	10	239
Technical certificate	14	181
High school	30	366
Primary school	0	5
Other educational level	1	13

Is your occupation in farming? (Those who farm only)	%	n
Not personally involved in farming	39	23
Grow grain crops, like wheat and barley	14	9
Grow fruit and vegetables	23	15
Have a dairy herd	18	11
Have a beef herd	21	15
Have sheep	9	6
Another type of farming	11	8

# QUESTIONNAIRE



## NGR 1906009 Questionnaire – FINAL Topical issues

8th May 2020

### Introduction

Thank you for your interest in this survey. We're keen to understand your views on a particular topic and we are recruiting a cross-section of [Australian/New Zealand] adults to take part.

Depending on your answers, the survey will take around 15 minutes to complete online.

Please be assured that your open and honest feedback will be treated confidentially. Research information from everyone taking part in the survey will be reported on a deidentified and aggregated basis and we will not disclose any information that could identify you directly.

You will not receive follow-up activity as a result of your participation.

To find out more about our privacy obligations to you, please access our privacy policy [INSERT LINK].

Would you be interested in participating? [YES/NO]

Please note that by accepting to take part in the survey, you acknowledge that this topic is confidential and agree not to share information about the topic with anyone else.

Use your mouse to 'click' the relevant circles or boxes and mark your selections. Some questions require you to type your answers in the space provided.

Please remember:

- When you have completed all questions on the screen, click the '>>' button to proceed to the next page.
- To begin the survey, click on the '>>' button below.
- If you need to return to the survey later, click the '>>' button and close the webpage. The next time you click on the invite link, it will automatically take you back to the question you were up to.

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### Qualifier questions (2 min)

Please complete the following qualifying questions to make sure we obtain a good spread of different types of people in the survey sample:

D1. Please indicate your gender.		
	Select 1	
Identify as male	<input type="checkbox"/>	CHECK QUOTAS – INTERLOCKING WITH AGE
Identify as female	<input type="checkbox"/>	
Identify as non-binary, gender diverse, or with descriptors other than man/boy or woman/girl	<input type="checkbox"/>	FOR QUOTA CONTROL PURPOSES, RANDOMLY ASSIGN AS MALE OR FEMALE.

D2. Please select the age range that you fall into:		
	Select 1	
Under 18	<input type="checkbox"/>	TERMINATE
18-24	<input type="checkbox"/>	QUOTAS WILL BE SET ON ADULT AGE TO ENSURE THAT WE OBTAIN A REPRESENTATIVE CROSS-SECTION OF RESPONDENTS (INTERLOCKED WITH GENDER)
25-29	<input type="checkbox"/>	
30-34	<input type="checkbox"/>	
35-39	<input type="checkbox"/>	
40-44	<input type="checkbox"/>	
45-49	<input type="checkbox"/>	
50-54	<input type="checkbox"/>	
55-59	<input type="checkbox"/>	
60-64	<input type="checkbox"/>	
65-69	<input type="checkbox"/>	
70-74	<input type="checkbox"/>	
75+	<input type="checkbox"/>	
Refused	<input type="checkbox"/>	TERMINATE

D3. Do you or someone in your immediate family or household work in any of the following industries? Randomise options. Lock 'None of these' at the bottom of the list.		
	Select all that apply	
Advertising	<input type="checkbox"/>	TERMINATE IF ANY OF THESE OPTIONS ARE MENTIONED
Public relations, journalism or the media	<input type="checkbox"/>	
Research, including scientific, market or social research	<input type="checkbox"/>	
Politics	<input type="checkbox"/>	
Water treatment and supply	<input type="checkbox"/>	
Waste management	<input type="checkbox"/>	
A government department (in a management level role or above)	<input type="checkbox"/>	
Banking or finance	<input type="checkbox"/>	CONTINUE IF ANY OF THESE OPTIONS ARE MENTIONED
Transport or travel	<input type="checkbox"/>	
Health or aged care services	<input type="checkbox"/>	
None of these (SINGLE CODE)	<input type="checkbox"/>	

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# QUESTIONNAIRE *CONT'D*

D4a. Please enter the postcode where you live. Write in.	
	QUOTA SET ON 'NEIGHBOURS' AND 'GENERAL COMMUNITY'  PLEASE CODE AS METRO OR REGIONAL FOR EACH STATE AND TERRITORY IN THE DATA FILE

D4b. Which of the following best describes where you live?	
	Select one
State capital city – CBD or inner suburbs	<input type="checkbox"/>
State capital city – suburban or outer metro	<input type="checkbox"/>
Large regional city or town	<input type="checkbox"/>
In a rural area, close to farmland	<input type="checkbox"/>
In a rural area, but not close to farmland	<input type="checkbox"/>

D4c. How long have you been living at your current location?	
	Select one
Less than 6 months	<input type="checkbox"/>
6 months or longer	<input type="checkbox"/>

D5. Do any of the following apply to you? Randomise order in which statements are shown. Select one option for each statement.			
	Yes	No	
I was born overseas	<input type="checkbox"/>	<input type="checkbox"/>	MONITOR QUOTA: SHOULD BE AROUND 21% OF TOTAL SAMPLE
At least one of my parents was born overseas	<input type="checkbox"/>	<input type="checkbox"/>	
I identify as Aboriginal	<input type="checkbox"/>	<input type="checkbox"/>	
I identify as Torres Strait Islander	<input type="checkbox"/>	<input type="checkbox"/>	MONITOR QUOTA: ATSI SHOULD BE 2% OF THE TOTAL SAMPLE IN AUS AND MAORI SHOULD BE 16.5% OF TOTAL SAMPLE IN NZ
I identify as Iwi or Maori	<input type="checkbox"/>	<input type="checkbox"/>	
I have at least one child aged 12 years or under living at home	<input type="checkbox"/>	<input type="checkbox"/>	QUOTAS ON HOUSEHOLDS WITH AND WITHOUT CHILDREN IN LINE WITH POPULATION STATISTICS
I have at least one child aged over 12 years old living at home	<input type="checkbox"/>	<input type="checkbox"/>	

Thank you, you qualify for this study. Please complete the following questions about issues in [Australia/New Zealand].

**PROGRAMMER:** PLEASE MAINTAIN THE SAMPLE QUOTAS (AGE, GENDER AND STATE/TERRITORY INTERLOCKED) AT AN OVERALL SAMPLE LEVEL (THIS MAY SKEW WITHIN METHOD I.E. CATI FOR OLDER AGE GROUPS).

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## The issues agenda and unprompted awareness of the topic (2-3 mins)

Q1. From your perspective, what are the biggest problems affecting the health of the natural environment in [Australia/New Zealand]? Write in.

## NEW SCREEN IN SURVEY

ONLY ASK IN THE ONLINE SURVEY						
Q2. In your personal opinion, how important are each of the following activities? Randomise order in which statements are shown. Select one option for each row						
	Extremely important	Very important	Fairly important	Not that important	Not important at all	
Working to preserve the natural environment in your local community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Minimising your water use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Avoiding chemicals in the food you eat and/or the products you use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Being conscious about what you put into the toilet, down the sink or into drains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Reducing, reusing and recycling waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Minimising your energy usage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Reducing your purchasing and use of plastic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

Q3 HAS BEEN REMOVED AND PARTLY COMBINED INTO THE PREVIOUS QUESTION

Q4. We'd like you to think about how waste products can be recycled or re-used. What comes to mind? Write in.

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# QUESTIONNAIRE *CONT'D*

## Prompted awareness of and attitudes towards the topic (4-5 mins)

Thank you for that, now for some more detailed questions about this topic.

<b>Q5. Are you aware of any wastewater treatment plants located in your local area? By wastewater, we mean what is disposed of via drains and toilets inside homes and businesses.</b>		
	Select one	
Yes	<input type="checkbox"/>	
No	<input type="checkbox"/>	
Not sure	<input type="checkbox"/>	

<b>Q6. To the best of your knowledge, which, if any, of the following activities do wastewater treatment plants undertake?</b> Randomise options. Lock 'Don't know' and 'Other' at the bottom of the list.		
	Select all that apply	
Treat the wastewater to remove pollutants	<input type="checkbox"/>	
Treat the wastewater for recycling	<input type="checkbox"/>	
Treat the wastewater before disposal into the ocean/river	<input type="checkbox"/>	
Treat the wastewater before trucking it off for additional processing	<input type="checkbox"/>	
Treat the wastewater to produce useful by-products	<input type="checkbox"/>	
Other (specify)	<input type="checkbox"/>	
Don't know (SINGLE CODE)	<input type="checkbox"/>	

## NEW SCREEN IN SURVEY

<b>ASK ALL</b> <b>Q7. We'd like to introduce the topic of 'biosolids'. Which of the following options best sums up your knowledge about biosolids?</b>		
	Select one	
I have not heard of biosolids before	<input type="checkbox"/>	
I have heard the word biosolids, but don't know what it means	<input type="checkbox"/>	
I know a little about biosolids	<input type="checkbox"/>	
I know a fair amount about biosolids	<input type="checkbox"/>	

<b>ASK ALL WHO KNOW AT LEAST A LITTLE ABOUT BIOSOLIDS AT Q7</b> <b>Q8. What do you know about biosolids?</b> Write in.	

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## ASK ALL

**Q9. From what you know about biosolids, or only from hearing the name just now, which of the following best sums up your feelings towards the possibility of biosolids being used in the following locations?**

**PROGRAMMER – PLEASE RANDOMISE ORDER STATEMENTS ARE SHOWN**

	Very Positive	Fairly positive	Neither positive nor negative	Fairly negative	Very negative	
In your local area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
In [Australia/NZ]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

## NEW SCREEN IN SURVEY

<b>Q10. Do you or anyone in your household do any gardening or farming?</b> Randomise options. Lock 'None of these' and 'other' at the bottom of the list.		
	Select all that apply	
Yes, gardening	<input type="checkbox"/>	
Yes, farming	<input type="checkbox"/>	
Neither (SINGLE CODE)	<input type="checkbox"/>	

## IF YES AT Q10

**Q11. What type of fertiliser, if any do you use?**

Randomise options. Lock 'None of these' and 'other' at the bottom of the list.

	Select all that apply	
Composted own vegetable/garden waste	<input type="checkbox"/>	
Commercial compost	<input type="checkbox"/>	
Animal manure	<input type="checkbox"/>	
Chemical fertiliser	<input type="checkbox"/>	
Biosolids	<input type="checkbox"/>	
Biosolids mixed with other components	<input type="checkbox"/>	
Other type of fertiliser (specify)	<input type="checkbox"/>	
None/don't use (SINGLE CODE)	<input type="checkbox"/>	
Don't know (SINGLE CODE)	<input type="checkbox"/>	

## NEW SCREEN IN SURVEY

### SHOW DEFINITION OF BIOSOLIDS TO ALL

*Biosolids are a solid by-product of wastewater treatment. They are good for soil fertilising and conditioning due to the nutrients and organic materials they contain. They can be applied to the land or used as fuel for power generation.*

*Biosolids can come in different forms. They may be quite liquid, or may be dried to produce a soil-like material known as 'cake'. Strict quality standards and guidelines in biosolids treatment processes make them extremely safe. The risk of disease via pathogens or environmental contamination is extremely low.*

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# QUESTIONNAIRE *CONT'D*

**Q12. After reading this description, which of the following best sums up your feelings towards the possibility of biosolids being used in your local area?**

	Very Positive	Fairly positive	Neither positive nor negative	Fairly negative	Very negative	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

**Q13. Why do you say that you are [INSERT ANSWER FROM Q12] about the possibility of biosolids being used in your local area?**

Write in.

## NEW SCREEN IN SURVEY

**Q14. How acceptable do you personally find each of the following biosolids reuse activities?**

Randomise order in which statements are shown. Select one option for each row

PLEASE REPEAT THIS RATING SCALE THROUGHOUT THE TABLE	Completely acceptable	Somewhat acceptable	Neither acceptable nor unacceptable	Somewhat unacceptable	Completely unacceptable	Not sure/don't know	
Neighbour spreading biosolids on their farm as fertiliser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Neighbour spreading biosolids on their garden as fertiliser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Applying biosolids to your own farm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1 ASK THIS ONLY TO THOSE WHO SAY THEY FARM AT Q10
Applying biosolids to your own garden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1 ASK THIS ONLY TO THOSE WHO SAY THEY GARDEN AT Q10
Being able to consume tree nuts (e.g. Macadamias) that have been grown on land that biosolids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

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have been applied to							
Being able to consume processed products (e.g. canola oil) that has been grown on land that biosolids have been applied to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Being able to consume beer produced from barley grown with the aid of biosolids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used to enrich forest soils to grow trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used in commercial or council (public) landscaping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used as fill for road construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used in building materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used to make fuel and energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used to rehabilitate land damaged by mining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being used to produce commercial fertiliser (e.g. compost)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids being applied on land used to grow livestock feed (e.g. hay)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

## ONLY ASK IN THE ONLINE SURVEY

**Q14a. How acceptable would you personally find it for food to potentially be grown in each of the following types of treated biosolids products?**

Randomise order in which statements are shown. Select one option for each row

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# QUESTIONNAIRE *CONT'D*

	Completely acceptable	Somewhat acceptable	Neither acceptable nor unacceptable	Somewhat unacceptable	Completely unacceptable	Not sure don't know	
Biosolids cake – the treated, solid soil-like product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Biosolids in dry pellet form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Compost made from biosolids and green waste through natural decomposition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Compost made from biosolids and green waste through digestion by worms (vermicomposting)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Charcoal fertilisers made by heating biosolids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
Fertilisers and additives that have been made through the chemical extraction of key nutrients from biosolids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

## Message testing (5 mins)

PROGRAMMER NOTE: Please show half of the respondents Q15 and Q16 first. Please show the other half Q17 and Q18 first to help remove ordering bias and enabling modelling of proactive and reactive communications. PLEASE ENSURE YOU CREATE A VARIABLE THAT IDENTIFIES WHICH RESPONDENTS SAW WHICH BATTERY FIRST.

**Q15. The following statements are positive things that others, such as scientists and industry specialists, have said about biosolids. Please read the following statements and rate how much you agree or disagree with each as a good reason for biosolids to be used for beneficial purposes in your local area.**

Randomise order in which options are shown. Select one option per statement

PROGRAMMER: PLEASE ENSURE THAT THE FINAL (UNDERLINED) PART OF THE QUESTION AND RATING SCALE IS PROMINENTLY DISPLAYED THROUGHOUT THE STATEMENT BATTERY GRID TO REMIND RESPONDENTS OF WHAT THEY ARE RATING EACH STATEMENT ON.

		Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	
AZ	Reusing safe, approved biosolids is a great way to reduce	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

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	waste that otherwise ends up in landfill						
LE	Biosolids are safer and more natural to use than chemical fertilisers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
WF	Biosolids work to enrich the soil, improving its capacity to retain water and helping reduce the impact of drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
JS	Most scientists say there is negligible risk associated with handling and use of biosolids that have been properly treated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
HD	Biosolids reuse is subject to strict guidelines and controls according to [Australian/New Zealand] quality and safety standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
IX	Biosolids return nutrients and organic matter back into the soil – completing the circular economy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
RJ	It costs less to reuse biosolids than it does to pay for them to be disposed in landfill resulting in lower water bill costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
PB	Biosolids are cheaper for farmers to use than chemical fertilisers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
ZN	Biosolids contain phosphates. Phosphates are needed to grow crops. They cannot be man-made and are running out in the natural environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
BB	Using biosolids in road base, for fuel and for building materials reduces the pressure on our natural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
CM	We can have confidence that biosolids reuse is safe and environmentally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

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# QUESTIONNAIRE *CONT'D*

	sound because it is regulated by the Environmental Protection Agencies in Australia and the Ministry for the Environment in NZ						
--	--	--	--	--	--	--	--

Q16. After seeing more information about a topic some people may change their opinion. Which of the following now best sums up your feelings towards the possibility of biosolids being used in your local area?							
	Very positive	Fairly positive	Neither positive nor negative	Fairly negative	Very negative		Select 1
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Q17. The following statements are negative things that others, such as scientists and industry specialists, have said about biosolids. Please read the following statements and rate how much you agree or disagree with each as a good reason for biosolids NOT to be used for beneficial purposes in your local area.

Randomise order in which options are shown.

PROGRAMMER: PLEASE ENSURE THAT THE FINAL (UNDERLINED) PART OF THE QUESTION AND RATING SCALE IS PROMINENTLY DISPLAYED THROUGHOUT THE STATEMENT BATTERY GRID TO REMIND RESPONDENTS OF WHAT THEY ARE RATING EACH STATEMENT ON.

		Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	
DA	Biosolids can have a foul odour during production and application onto soil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
XP	Contaminants in biosolids may somehow end up in the food chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
EI	It doesn't seem right to use human waste in this way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
GB	Pests would be attracted to the areas in which they are applied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
ZC	No-one really knows the full long-term impacts of biosolids on human health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
YD	No-one really knows the full long-term impacts of biosolids on the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
SE	The composition of biosolids depends so much on what goes into the sewers – we	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

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	could end up putting contaminants onto the land						
FL	It can be expensive to process, transport and use biosolids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
FG	Using biosolids in my environment or to make my food conflicts with my cultural or religious beliefs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
JY	Biosolids can create dust during application	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
TV	Increased use of biosolids will mean more trucks on the road transporting the waste to where it is needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1
LA	Biosolids could contain pathogens that cause sickness where they are used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Select 1

Q18. After seeing more information about a topic some people may change their opinion. Which of the following now best sums up your feelings towards the possibility of biosolids being used in your local area?							
	Very positive	Fairly positive	Neither positive nor negative	Fairly negative	Very negative		Select 1
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

## Information sources (1 min)

ONLY ASK IN THE ONLINE SURVEY

Q19. Which of the following sources of information about biosolids would you consider trustworthy? Randomise order in which statements are shown. Select all options that apply		
Federal Government (Aus)/ NZ Government (NZ)	<input type="checkbox"/>	
State Government (Aus)/ Local Government (NZ)	<input type="checkbox"/>	
Government Health Departments	<input type="checkbox"/>	
Environment Departments	<input type="checkbox"/>	
CSIRO / Crown Research Institutes	<input type="checkbox"/>	
University researchers	<input type="checkbox"/>	
Wastewater treatment plant operators	<input type="checkbox"/>	
Private companies that sell, manage and use biosolids	<input type="checkbox"/>	
Local media (e.g. newspaper, radio etc.)	<input type="checkbox"/>	
Environmental groups like Greenpeace	<input type="checkbox"/>	
Local community action groups	<input type="checkbox"/>	

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# QUESTIONNAIRE *CONT'D*

Social media (e.g. Facebook posts and Groups)	<input type="checkbox"/>	
Word of mouth	<input type="checkbox"/>	
Someone else (PLEASE SPECIFY)	<input type="checkbox"/>	
Not sure	<input type="checkbox"/>	

## Demographics (1 min)

To help us better understand how different groups of people might feel differently about this topic, we just have a one or two final questions about your personal or household circumstances. These will be aggregated with other responses and will not be linked to you personally.

IF RESPONDENT SAYS YES TO FARMING AT Q10 ASK THIS QUESTION	
D8. Is your occupation in farming?	
	Select all that apply
No, I am not personally involved in farming (SINGLE CODE)	<input type="checkbox"/>
Yes, I grow grain crops, like wheat and barley	<input type="checkbox"/>
Yes, I grow fruit and vegetables	<input type="checkbox"/>
Yes, I have a dairy herd	<input type="checkbox"/>
Yes, I have a beef herd	<input type="checkbox"/>
Yes, I have sheep	<input type="checkbox"/>
Yes, I undertake another type of farming (PLEASE SPECIFY)	<input type="checkbox"/>

D9. Which of the following is your highest level of education?	
	Select one only
Postgraduate degree	<input type="checkbox"/>
Graduate diploma / certificate	<input type="checkbox"/>
Bachelor's degree	<input type="checkbox"/>
Advanced diploma / diploma	<input type="checkbox"/>
Technical certificate	<input type="checkbox"/>
High school	<input type="checkbox"/>
Primary school	<input type="checkbox"/>
Other educational level	<input type="checkbox"/>

## Closing Screen

Thank you for your time and contribution to this survey.

It has been conducted on behalf of the Australian and NZ Biosolids Partnership. For more information on biosolids and the Partnership's work, please visit their website at [www.biosolids.com.au](http://www.biosolids.com.au)

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